The Mining Journal

RAILWAY AND COMMERCIAL GAZETTE.

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

No. 752.---Vol. XX.] LONDON, SATURDAY, JANUARY 19, 1850. [Price 6d.

IMPORTANT SALE OF PILCHARD SEANS, SHARES IN VESSELS AND MINES AT PENZANCE, CORNWALL.

MESSRS. GEO. H. BELLRINGER & WM. RICHARDS, will SELL, BY AUCTION (unless previously disposed of by PRIVATE CONTRACT), on Tuesday, the 22d day of January next, by Two o'clock in the afternoon, at Ball's Union Hotel, in PENZANCE, in such lots as may suit the convenience of purchasers, SHARES in the following

PILCHARD FISHERIES: viz.—

30-100ths in the BATTEN FISHING CO., at St. Ives, consisting of 7 Seans and 10 Boats.
40-100ths in the ALLIANCE FISHING CO., at St. Ives, with the like number of Seans and Boats.
25-100ths in the RUTH FISHING CO., at St. Ives, with like number of Seans and Boats.
24-64ths in the HAPPY RETURN FISHING CO., at Newlyn, near Penzance, with the Seans and Boats belonging thereto.
10-64ths in the ATLANTIC FISHING CO., at Newlyn.

The Pilchard Fishery at St. Ives is one of the most prosperous concerns in the West of England; the catches of fish of late years have been from 10,000 to 20,000 hgds. annually.

VESSELS.

8-64th shares in the newly-built Barque, SHANNON, of this port, William Semmens Daves, Master, 500 tons burthen, now on a voyage in the Mediterrean.
10-64th shares in the Brigantine, SCOTIA, of this port, James Daves, Master, 170 tons burthen, now on a voyage to Naples.
32-64th shares in the Schooner, VENUS, of this port, George Bawden, Master, 180 tons burthen, a regular trader between Penzance and Wales.
32-64th shares in the Schooner, ANN, of this port, Philip Johns, Master, 96 tons burthen, a constant trader between Penzance and Wales.
16-64th shares in the Schooner, CHARLOTTE ANN, of this port, James Cockburn, Master, 120 tons burthen, now in the Mediterranean, bound home.

MINES.

Shares in the following valuable and productive Mines, with the Tin, Tinstuff, Copper and other ores, Engines, Whims, Tools, Tackle, and other materials, property, and effects thereunto belonging: viz.—

8-100th shares in BOTALLACK, in the parish of St. Just, in Penwith.
15-160th shares in LEVANT, in the parish of St. Just.
252-672d shares in DING DONG, in the parish of Madron.
39-124th shares in BOSWEDDEN, in the parish of St. Just.
7-40th shares in WHEAL OWLES, in the parish of St. Just.
6-40th shares in NANPEAN AND BOLLOWAL, in the said parish of St. Just.
20-120th shares in WHEAL REETH, in the parish of Uny Lelant.
8-94th shares in BALNOON CONSOLS, in the said parish of Uny Lelant.
4-128th shares in HAWKE'S POINT, in the said parish of Uny Lelant.
2-119th shares in GREAT WORK CONSOLS, in the parish of Breage and Germoe.
1-98th share in WHEAL VOR Consolidated Mines, in the said parish of Breage.
8-128th shares in BUDNICK CONSOLS, in the parish of Perranzabuloe, near St. Agnes.

Full particulars of the various lots in which the Fisheries, Shipping, and Mine Shares will be put up to Auction may be obtained in a printed Catalogue, to be had of the Auctioneers, at Penzance; and also of Messrs. Rowe & Son, printers, Penzance; Mrs. Heard and Sons, printers, Truro; Mr. Carlyon, printer, Helston; Mr. Dixon, printer, Falmouth; Mr. Drew, printer, St. Austell; Mr. Richard Esterbrook, printer, Liskeard; and at the office of the *Mining Journal*, 26, Fleet-street, London; and all further particulars may be had on application to the Auctioneers: or to Messrs. John, Rodd, and Darke, solicitors Penzance.—Dated Penzance, December 26, 1849.

EXTENSIVE SALE OF MACHINERY, ENGINEERS' and MACHINEMAKERS' TOOLS, PATTERNS, and STOCK, LOCOMOTIVE ENGINES and TENDERS, &c., AT WALLACE FOUNDRY, DUNDEE.

MR. J. M. BEATTS has been instructed to SELL, BY PUBLIC AUCTION, within the Wallace Foundry, DUNDEE, on Tuesday, the 5th February next, and following days, commencing each day at half-past Ten o'clock A.M.,

THE WHOLE MACHINERY AND TOOLS

belonging to Messrs. Kinmonds and Co., engineers, who have resolved to discontinue that part of their business—comprising engineers' and machinemakers' tools of all kinds, heavy boring and turning lathes, large and small vertical boring machines, slotting machine, planing machines, screwing machine, self-acting and common turning lathes, from 7 inches to 18 inches high, with slide rests, &c., large cranes, smiths' and boilermakers' tools, vices, anvils, punching, rolling, and clipping machines, large boiler waggons, stock of boiler-plate, bar-iron, hardwood, &c.

THREE LOCOMOTIVE ENGINES and TENDERS; 12-horse High-pressure ENGINE.

Several sets of railway carriage and engine wheels and axles, and the whole stock of valuable patterns.

The business carried on by Messrs. Kinmonds and Co. was of a very extensive description, and the machinery and tools are for the most part new, and of the most approved construction. The stock of patterns is very extensive and valuable. The whole may be examined on the premises till the day of sale.

Catalogues may be obtained at the following places—viz.:

London—William Randall, Esq., 167, Fenchurch-street.
Antwerp—William Wood, Esq.
Dunkirk—David Dickson, Esq.
Leeds—Robert Berrie, Esq., Salem-place.
Newcastle—Messrs. John Spencer and Son, Sussex-street, Forth-street.
Hull—Messrs. Thompson, M'Kay, and Coy.
Liverpool—Messrs. Stewart and Cox, 15, Rumford-street.
Edinburgh—Messrs. James Tod and Sons, Leith Walk.
Glasgow—Messrs. Henry Brothers, 5, Dixon-street.
Dundee—At the works, and of Mr. J. M. Beatts, Auction Mart, 39, Reform-street.

Wallace Foundry, Dundee, Jan. 14, 1850.

GLAMORGANSHIRE—SOUTH WALES.

MR. THOMAS WILLIAMS will SELL, by AUCTION, at the Angel Inn, CARDIFF, on Thursday, Feb. 7th, 1850, at Three o'clock in the afternoon (unless previously disposed of by private contract, of which due notice will be given), all that recently opened Colliery, called, the

RHONDDA COLLIERY,

Situate on the side of the Rhondda Branch of the Taff Vale Railway, and about fourteen miles from the port of Cardiff, together with all the STOCK and PLANT; including a newly-erected ENGINE, 20 inches cylinder, 6 feet stroke, and FIVE WORKMEN'S COTTAGES.

The whole of the Minerals belonging to the above Colliery, consisting of the "Hafod," "Cymmer," and "Coffin's" celebrated seam of coal, are held under leases from Messrs. Edwards and Gething, about 94 years of which are unexpired.

The "Cymmer" seam of coal is worked by a pit of 25 fathoms depth, with an area of about 300 acres unwrought. "Coffins" seam underlies the latter about 30 fathoms, with an area of about 300 acres.

For view of the Works, inspection of the plans, or further particulars, apply to Mr. David Morgan, Coal-merchant, or to Messrs. D. and J. Thomas, Mining Engineers and Surveyors, Pontypridd.

To ENGINEERS, MINING and COLLIERY COMPANIES, BREWERS, DISTILLERS, MANUFACTURERS, WHARFINGERS, and WAREHOUSE-KEEPERS, IRON-FOUNDERS, BUILDERS, and OTHERS.

IMPORTANT SALE OF SURPLUS RAILWAY MATERIAL, STEAM-ENGINES, PLANT, and MACHINERY, including 800 tons IRON.—MINORIES & BLACKWALL.

PULLEN & SON respectfully announce, that they have received instructions from the directors of the London and Blackwall Railway Company to SELL, BY AUCTION, at the Minories Station, and at the Terminus, Blackwall, on Monday, 11th February, and following days, at Twelve o'clock, in consequence of the alteration in the motive power on the line, the whole of the extremely valuable

PLANT AND MACHINERY

lately used in working the Rope, including 2 pairs of magnificent first-class STEAM-ENGINES, of 220 and 150-horse power each, constructed by Messrs. Maudslay & Field, and Mr. John Barnes, and in the best possible working condition; 7 large iron tanks, by Bramah, 26 feet square and 6 feet deep, gauging 25,000 gallons each, with brass valves, sluice cocks, &c.; 2 pairs of powerful hoisting machines for goods, by Ellis and Noton, of Manchester, to lift 5 tons each, with large break wheels, iron cradles, and apparatus; 4 24-feet diameter iron drum-wheels for coiling the rope, with large break and pinion-wheels, iron shafting, and plummer blocks; 4 vacuum pumps, with pipes, brass cocks, rods, and fittings; 4 20-feet diameter iron cog-wheels, with powerful driving and shifting gear; 1000 feet of 12 and 9-inch flange and socket pipe, 250 feet of 2-feet 6-inch iron shoots, 30 iron girders, iron columns and framing, 2 capital wrought-iron marine boilers, 10 feet square, with three furnaces in each, large quantity of sound brickwork, and other valuable material.

May be viewed on Friday and Saturday previous to the sale.—Catalogues had at the secretary's office, Fenchurch-street Terminus; at the superintendent's office, Blackwall; and of Pullen and Son, 80, Fore-street, Cripplegate.

IMPORTANT AND VALUABLE MINING SETT TO BE GRANTED, ADJOINING WHEAL VINCENT, IN ALTARNUN, CORNWALL.

The PROPRIETOR of an ESTATE, consisting of 200 acres of land, within a ring fence is willing to GRANT a SETT thereon, to SEARCH for MINERALS, on liberal terms. The property is situate in the parish of ALTARNUN, CORNWALL, adjoining to, and west of, the very promising adventure Wheal Vincent, and all the lodes of that mine run through it. The estate has been inspected by a respectable mining captain, and in his report to the owner of the soil, he says—"There are three lodes on Wheal Vincent Mine, now making returns, running nearly east and west—consequently, they all pass through your property, and two of them immediately on leaving the Wheal Vincent sett. It can be clearly shown that there are seven lodes of tin and copper to be found on your land. The advantages connected with the working of a mine on your property are evidently very great. There are good roads leading to the farm-house, where a water-wheel might be erected if necessary: there are immense quantities of stone for building on the spot: there is also the advantage of driving in adits on the course of the lodes to a great depth; and there is a never-falling stream of water, capable of working wheels of almost any power, so that there would be no necessity whatever for steam-power to fully prosecute the different lodes which pass through your estate."

For all further information, application may be made to Capt. James Hosking, of Callington; and to treat for the grant, to Mr. Sargent, solicitor, Liskeard.—Dated Jan., 1850

BLAIR IRON-WORKS.—These extensive IRON-WORKS, with the LEASES of the MINERAL FIELDS, as formerly advertised, will be EXPOSED FOR PUBLIC COMPETITION on or about the month of APRIL next, if not previously disposed of by private bargain.

In the meantime offers will be received, and information afforded, by Mr. Brown, 35, St. Vincent-place, Glasgow.

FARMBROUGH COLLIERY, near BATH.—FOR SALE, a powerful and nearly new CONDENSING STEAM-ENGINE, with 31½-inch cylinder, 6-feet stroke, and excellent WINDING and PUMPING APPARATUS.—About 150 fathoms of 9, 8, and 6-inch PIPES, with suitable working barrels and rods for plunger and lifting pumps; horse drum, crab winches, round and flat-ropes, with a variety of useful COLLIERY MATERIALS.

A person on the premises will show the above; and for further particulars apply to Mr. Richard Evans, Grove Cottage, Timsbury, near Bath.

TO COAL AND IRONMASTERS.—The PROPRIETOR of an extensive range of several SEAMS of very superior COALS, on the borders of DERBYSHIRE, with the most favourable means of transit to the best market in the realm, both by railway and canal, each within a few hundred yards, is now prepared to LEASE the SAME on favourable terms. The above will be found most desirable, as a sufficient market already exists for an immense quantity of them.—Also, an EXTENSIVE RANGE of IRONSTONE may BE LET with the SAME, if desirable.

For particulars of the same, application may be made to "R. C." at the office of the *Mining Journal*, 26, Fleet-street, London.

TOUGHENED CAST-IRON—STIRLING'S PATENT

No. 1—For SMALL and MEDIUM CASTINGS.
No. 3—For HEAVY CASTINGS.
No. 3 (*Extra*)—For ROLLS, HEAVY SHAFTS, and VERY HEAVY CASTINGS.

The above is by far the strongest Cast-Iron made, and is now being extensively used where strong castings are required.

Further particulars may be obtained on application to

Messrs. GARDEN & MACANDREW,
27, Queen-street, Cheapside, from whom also the IRON can be PROCURED.

JOSEPH DEELEY, of the LONDON and NEWPORT IRON-WORKS, NEWPORT, MONMOUTHSHIRE, respectfully recommends to the notice of the public his PATENT FOUNDRY FURNACE, which has been effectually tested, and is now in constant use at the above works, where it may be seen by all persons interested. This furnace operates without the aid of any motive-power to impel the air. An immense saving is the consequence, both in erecting and working. One-third of the coke usually consumed is more than sufficient; a loss of only 22 lbs. of iron to the ton is sustained in smelting. It is also available for large or small work of every description, and may be tapped out as required.

The IRON MELTED in this furnace also undergoes an extraordinary improvement in quality.

SCOTCH PIG and SCRAP are returned equal to cold-blast in point of strength, and capable of being chipped or filed with the greatest facility.

FOUNDRIES USING this FURNACE may exist in the most densely populated cities, without causing the least nuisance—all smoke, dust, and noise being avoided.

The Continental, Colonial, Scotch, and Irish PATENT RIGHTS are for disposal; the Patentee would also treat for the purchase of Patent Rights, or Grant Licenses to manufacture for certain counties or districts in England or Wales.

APPLY TO THE PATENTEE AS ABOVE.

STEVENS AND SON, GAS-ENGINEERS, IRON and BRASS FOUNDERS, and CONTRACTORS for the ERECTION of GAS-WORKS, inclusive of APPARATUS, of every description, for the MANUFACTURE OF GAS, and the FITTINGS of from 20 to 20,000 LIGHTS, whether for Public or Private use.

ESTABLISHED IN 1815.

MANUFACTURERS of STATION METERS AND GOVERNORS; and CONSUMERS' GAS-METERS, of the most approved construction.

CAST-IRON MAINS SUPPLIED and LAID for GAS or WATER; Street Lamp-posts, Brackets, and Bronze, Copper, Iron, or Tin Lanthorns.

TANKS and LIQUOR BACKS, of any dimensions, in Cast-iron or Galvanised Wrought-iron, constructed and erected.

The PATENT SEMAPHORE RAILWAY SIGNALS; and RAILWAY LAMPS, for Stations, Engines, Carriages, Signalmen, &c.

REGISTERING TURN-STILES, for Bridges, Piers, Baths, Public Gardens, &c.

ARCHITECTURAL DESIGNS CARVED in WOOD, or MODELLED in WAX or COMPOSITION, by Artists on the premises, and CAST in BRONZE, BRASS, IRON, &c. And DRAWINGS, PLANS, and SPECIFICATIONS submitted.

Address—STEVENS & SON, DARLINGTON WORKS,
19, *SOUTHWARK BRIDGE-ROAD, LONDON.*

STRUVE'S PATENT MINE VENTILATOR.

Cost—£150.

TO COLLIERY PROPRIETORS.

Quantity of air passed through a Mine almost unlimited, to the extent of 200,000 cubic feet per minute, if necessary—depending on size of apparatus.

COST of an APPARATUS to produce a ventilation of 20,000 cubic feet per minute, ONE HUNDRED and FIFTY POUNDS, exclusive of patent right. This amount of ventilation would be sufficient for a mine working 150 tons per day, provided it was not very fiery; in which case it would be desirable to provide for 30,000 cubic feet of air per minute. The capabilities of the Ventilator may be doubled at any future time, at a comparatively small cost.

The Ventilator has been at work for upwards of nine months at the Eaglesbush Colliery, near Neath, working under a rarefaction of 2½ to 3 inches of water, which demonstrates the impracticability of furnace ventilation, when the shafts are shallow and the airways small.—It is practical to rarify a mine by this ventilator to the extent of 2 feet of water, or 2 inches of mercury.

LICENSES will be GRANTED on application to

Mr. WILLIAM PRICE STRUVE, Swansea,
CIVIL ENGINEER AND MINERAL SURVEYOR.

INDURATED AND IMPERVIOUS STONE, CHALK, &c.—AGENTS, with capital, are WANTED in all TOWNS to SUPPLY (under British and Foreign Patents) the great demand for HUTCHISONISED MATERIALS—hard as granite, impervious to moisture, vermin, &c.; the cheapest and most durable for all buildings, hydraulic, paving, monumental and decorative work.—The profits are large.

Apply to HUTCHISON & CO.,

140, Strand, London; or Tunbridge Wells, Kent, and Caen, Normandy, stating name, address, and capital at command.

N.B.—Houses cured of damp. The produce of soft stone quarries, chalk, plaster of Paris, wood, pasteboard, and all absorbent materials indurated to resist frost, vermin, &c.

LICENCES GRANTED.

TO MINERALOGISTS, GEOLOGISTS, CONCHOLOGISTS, &c. HENRY NORRIS, FANCY BOX MANUFACTURER,

35, *DORCHESTER-STREET, NEW NORTH-ROAD, HOXTON, LONDON,*

Respectfully directs attention to his IMPROVED SPECIMEN BOXES, with GLASS TOPS, which have given such general satisfaction to collectors who have already used them. Persons residing in town waited on with patterns, on receipt of letters, addressed as above. A pattern box forwarded by post to any part of the country, on receipt of two postage stamps. Cabinets fitted with cardboard trays to any drawings or designs.

COMBMARTIN AND NORTH DEVON LEAD AND SILVER SMELTING COMPANY.

REGISTERED UNDER THE JOINT-STOCK COMPANIES' ACT.

The SMELTING-WORKS of the above COMPANY are in ACTIVE OPERATION.—SAMPLES of LEAD and SILVERY ORES are requested to be forwarded to Captain Cornelius Bawden, Combmartin, near Ilfracomb, North Devon.

Payment for ores by bill, at three months, or cash if required.

Combmartin, Jan. 1, 1850. THOMAS L. WILLSHIRE, Secretary.

WEST POLGOOTH TIN MINING COMPANY

Capital £12500, in 2500 shares, of £5 each.

CONDUCTED ON THE COST-BOOK SYSTEM.

Deposit £1 per share.

OFFICES, 15, OLD BROAD-STREET.

This valuable MINERAL PROPERTY is that portion of the unworked ore ground in a line between the Great Hewas and the Great Polgooth Mines: in extent it is about three-quarters of a mile on the course of the lodes, and its mean breadth half a mile—held under a lease of 21 years from Lord Mount Edgecombe, at 1-18th dues. The Hewas Mine returned from one lode the greatest quantity of tin in the time of any mine in the kingdom. Polgooth is now making, at a large profit, returns of nearly £3000 per month; both these mines are more than 110 fathoms deep. West Polgooth Mine is only down 34 fathoms—consequently there remains above 70 fathoms of virgin ore ground for the present company to return before they reach the level of the adjoining mines, and which is computed to be sufficient to employ 800 persons for 20 years to come. The tin is of a very fine quality, and with an outlay of £6000, 35 tons of tin per month may be returned, yielding a profit of 25 per cent.

The management is by a London committee, and the works on the mine prosecuted at the lowest possible cost.

A prospectus, with lithograph plan and section attached, may be had by applying to Mr. Robert Williams, the purser, at Mr. Richardson's offices, 15, Old Broad-street, where the Cost-book, containing the names of the directors, the rules, reports, specimens, working plans, &c., may be seen, and of whom full particulars may be known.

TO CAPITALISTS.—WANTED, FORTY THOUSAND POUNDS for MINING PURPOSES, to extend the WORKINGS of a TIN MINE, paying at present upwards of 25 per cent.; and to set at WORK TWO or THREE MINES, containing TIN, COPPER, LEAD, and SILVER, in which many thousands of pounds have been expended—requiring a further small outlay to make them dividend-paying mines.—For particulars apply by letter, from principals only, to Mr. R. C. Manuel, No. 2, Milton Cottage, Plumstead, Kent.

MINING.—ONE THOUSAND POUNDS WANTED towards PURCHASING STAMPING STEAM-POWER, &c., to make a good TIN MINE return regular dividends: one-sixth of the mine would be given for the above amount. The draught steam-engine and all other claims are paid up to the 31st December. The mine is private property, and small holders will not be admitted.—Apply to "A. Z.," 6, Petersburg-place, Bayswater.

WANTED,—By a Gentleman who for many years was agent in London to one of the largest iron houses in the north, doing a large business in London, Liverpool, and Glasgow, a SIMILAR AGENCY. This will be found a most desirable opportunity to any house wishing to increase their London trade. The first references given.—Address "T. O.," care of Mr. Bruce, stationer, Trump-st., Cheapside.

WANTED,—By a respectable man, a SITUATION as ROLLER OF METALS, and likewise a competent ROLL TURNER; can have 14 years' character from his last place.—Apply by letter (pre-paid) to "H. S.," Post-office, Wheaverham, near Northwick, Cheshire.

WANTED,—ONE HUNDRED and FIFTY YARDS of 14 or 15-inch PUMP STOCKS, with WORKING BARREL, CLACK PIECE, and WINDBORE, all complete, and L legs to match.

Apply, by letter, "Box 105, Post Office, Wigan."

STEAM-ENGINE FOR SALE.—FOR SALE, by PRIVATE CONTRACT, a 22½-inch PUMPING-ENGINE. The engine is a very good one, and is in thorough repair, and will be sold on advantageous terms.—Also, a good 10-ton BOILER, which will be sold either separately or with the engine.

Applications to be made either to Mr. Silvs. W. Jenkin, civil engineer, Redruth; or to Mr. John Bowden, jun., Liskeard, Cornwall.—Dated Jan. 7, 1850.

STEAM-ENGINE FOR SALE.—TO BE SOLD, BY PRIVATE CONTRACT, a 33-inch CYLINDER STEAM-ENGINE, 8 feet stroke, equal beam, with Steam Case, Brass Air Pump, Boiler and Connections, and Capstan and Shears.—Application to be made to Mr. F. Pryor, Bell Cottage, Redruth.

Dated January 2, 1850.

CAMBORNE CONSOLS COPPER MINES, CAMBORNE CORNWALL.—OFFICES REMOVED to 22, NEW BRIDGE-STREET, BLACKFRIARS.—London, January, 1850. H. L. T. VON USTER, Secretary.

COURT GRANGE SILVER-LEAD MINES, CARDIGANSHIRE.—OFFICES REMOVED to No. 22, NEW BRIDGE-STREET, BLACKFRIARS.—London, January, 1850. H. L. T. VON USTER, Secretary.

CERRO DEL BOTE MINING COMPANY.—The SUBSCRIPTION LIST WILL BE CLOSED on the 24th inst., up to which day inclusive applications for shares may be addressed to the committee, either at the company's office, No. 13, Austinfriars, or at that of John Taylor, jun., Esq., No. 6, Queen-street-place, Upper Thames-street, where also prospectuses may be obtained.

MAESTEG IRON-WORKS.—The ASSIGNEES of the MAESTEG IRON COMPANY having made ARRANGEMENTS with the MORTGAGEES, which have removed previous difficulties, are now in a position to TREAT for the SALE of the WORKS, MINERAL LEASES, and PLANT.

Particulars may be obtained by application to Messrs. Sewell and Fox, solicitors, 51, Old Broad-street, London; Messrs. Whittington and Gribble, solicitors; or Edward Mant Miller, Esq., official assignee, Bristol.—Jan. 8, 1850.

MR. EVAN HOPKINS, C.E., F.G.S., &c, CONSULTING MINING ENGINEER,

BARRINGTON-ROAD, BRIXTON, AND 13, AUSTINFRIARS, CITY.

MINING SHAREHOLDERS, and those who intend to INVEST their CAPITAL in MINES, requiring PERIODICAL ADVICE for their government, SURVEYING and INSPECTION of any description of MINERAL PROPERTY, may make an ANNUAL ARRANGEMENT, on moderate terms, on application (by letter) to Mr. HOPKINS.

MINE CAPTAINS and MINING ENGINEERS receive INSTRUCTION "How to Observe Mineral Property," as usual, by letter.

N.B.—All communications considered as private and confidential.

*** E. H. begs to return his thanks for the very kind expressions of confidence conveyed in the letters of those who have been guided by his advice during last year in England and on the continent, and the important benefit derived therefrom. He trusts it will continue to prove equally beneficial to all legitimate mines and miners.

MINING OFFICES, No. 3, GEORGE-YARD, LOMBARD-STREET, LONDON.—Mr. THOS. P. THOMAS is a BUYER of South Basset, South Frances, South Tolgus, West Wheal Jewel, Cook's Kitchen, East Buller, Wheal Seton, and Wheal Trelawny; and is a SELLER of Providence Mines, St. Ives Consols, West Caradon, Treviskey and Barrier, Wheal Comfort, and Tregorden.

Mr. T. P. THOMAS will at all times feel pleasure in giving information as to the Cornish, Welsh, and Foreign Mines, upon application.

MR. T. A. READWIN, MINING OFFICES, 2, *WINCHESTER-BUILDINGS, OLD BROAD-STREET, LONDON.*

MR. RYE is a BUYER in Stray Park, Treviskey, South Tolgus, Condurrow, and United Mines.—For particulars, apply at his office, No. 77, Old Broad-street, City.

MR. C. S. RICHARDSON, CIVIL ENGINEER, LAND AND MINING SURVEYOR.

No. 15, OLD BROAD-STREET, LONDON.

MR. GEORGE BATE, Jun., CIVIL ENGINEER AND SURVEYOR, *WOLVERHAMPTON.*

Offices in Queen-street, corner of Piper's-row.

N.B.—UNDERGROUND MINING SURVEYS accurately executed.

JAMES LANE, MINING SHARE DEALER, 80, *OLD BROAD-STREET, LONDON.*

ASTURIAN MINING COMPANY.—Notice is hereby given, that all SHARES on which the CALL due on the 10th November last shall NOT HAVE BEEN PAID on or before the 26th January inst., will be absolutely FORFEITED

By order of the Board of Directors and Liquidators,
9, Austinfriars, Jan. 15, 1850. K. MACKENZIE, Secretary.

CONSOLIDATED COPPER MINES OF COBRE ASSOCIATION.—Notice is hereby given, that a SPECIAL GENERAL MEETING of the proprietors of this association will be held, at the office of the company, No. 26, Austinfriars, on Wednesday, the 30th instant, at 1 o'clock precisely, for the purpose of confirming the following resolution, passed at a Special General Meeting held on Tuesday the 8th instant:—"That the directors be and are hereby authorised to increase the amount of the reserved fund beyond the amount of £20,000, now limited by the Deed of Settlement; and that such increase be effected by adding to the present reserved fund five per cent. upon the dividend this day declared, and upon the dividends hereafter to be declared, until such reserve fund shall be made up and amount to the sum of £40,000.

By order of the Court of Directors,
26, Austinfriars, Jan. 14, 1850. WM. LECKIE, Secretary.

HOLYFORD COPPER MINING ASSOCIATION.—The HALF-YEARLY GENERAL MEETING of the shareholders of this association will be HELD at the office, 34, Great Winchester-street, on Wednesday, the 30th January inst., at Twelve o'clock, for the election of directors, in place of Edward Hunt, Frederick Le Mesurier, and Charles Hunt; and auditors, in place of Arthur Hunt and William Brock, whose term of office then expires, and for the ordinary business of the association.

London, Jan. 16, 1850. J. W. BUCKLAND, Jun., Secretary.

KINZIGTHAL MINING ASSOCIATION.—NOTICE OF CALL.—Notice is hereby given, that the directors of the KINZIGTHAL MINING ASSOCIATION have this day made a CALL of FIVE SHILLINGS, or Three Florins, per share, and have appointed such call to be PAID on or before Monday, the 21st of January, 1850, to their bankers—viz.:

In LONDON—Messrs. Masterman, Peters, and Co.
In STUTTGARD—Messrs. Doertenbach and Co.

By the Statutes of the Association interest, at the rate of 5 per cent. per annum, will be charged upon all sums in arrear after the 21st of January, 1850.

By order of the board, GEO. COPELAND CAPPER, Sec.
1, Adelaide-place, London-bridge, Dec. 15, 1849.

TAMAR SILVER-LEAD MINING COMPANY AND WORKS.—Notice is hereby given, that a SPECIAL GENERAL MEETING of the shareholders in this Company will be HELD at the offices, Salvador House, Bishopsgate, on Thursday, the 7th day of February next, at Two o'clock precisely, to take into consideration the payment of a dividend and other matters.

Salvador House, Jan. 10, 1850.

THE FIRST RAILWAY ACT.—Mr. Bigg says:—"The first railway Act was passed in 1801, and authorised the Surry Iron Railway Company to construct a railway from the River Thames, at Wandsworth, to Croydon; this company applied to Parliament in 1846, representing 'that the traffic along the line has, ever since the completion thereof, been very small, and has of late years been gradually diminishing; and since the year 1825 no dividend whatever has been declared upon the shares in the undertaking,' and they obtained an Act, authorising the sale of their lands, and the dissolution of the company. It is a singular coincidence that the session which witnessed the introduction of an unprecedented number of bills, applying for parliamentary sanction to so many new lines, should be the same in which the railway company first incorporated pleaded the total failure of their undertaking, as a ground for being allowed to wind up their affairs."—*Salt's Railway and Commercial Information.*

THE SMOKE NUISANCE.—How to enable and how to compel manufacturers to "consume their own smoke," is a problem not yet solved; but our neighbour, Joseph Price, Esq., glass-manufacturer, has a notion that the best way to be rid of the nuisance is never to make the smoke at all. The plague of smoke, as all our readers know, arises from the fact that manufacturers use coal, part of which they burn, and throw the rest into the air. Mr. Price uses coke—no smoke is made, and no nuisance is created. But coke, with an ordinary boiler, will not "get up the steam." Mr. Price, therefore, uses an extraordinary boiler—one of his own invention. It stands by the River Tyne, in the glass-works of the inventor, where any one may see it. What first strikes you, when you see it, is the fact that it has no bed of brick-work, but rests independently upon legs of its own. The door being opened, you see, at the back of the furnace, the mouth of a flue. This flue extends to the end of the boiler, and there communicates with two returning flues, one on each side of the boiler, which pass into the chimney. Owing to the length of the draught the coke makes a hot fire (so hot, indeed, that it quickly brought a piece of iron to welding heat in our presence); while the bars keep cool, and the door can be opened by the tender with his naked hand. The cleansing of the boiler is the work of a minute. It is simply necessary to turn a tap or two, and let the hot water run out until it flows clear, which it does in a few seconds. An old lady, in want of a bucket of hot water, came up while we where examining the boiler, turned one of the taps, waited a moment until she saw the water run white, and then took her supply, having helped herself and cleaned the boiler at the same time. The tenter told us that he had never been in the boiler but once during the last 18 months, and that was not to cleanse it, but only to see if it remained in good condition. Besides the non-production of smoke, Mr. Price's boiler possesses many other advantages; and it is well worthy of inspection by gentlemen more conversant with such matters than we are, and more competent to ascertain whether the advantages secured by the improvements are accompanied by any drawbacks.—*Gateshead Observer.*

MONSTER IRON WAREHOUSE.—A most commodious iron warehouse, intended for exportation to California, has recently been built at Liverpool. It is 60 feet in length by 40 feet in width, and its extreme height, by external measurement, is 36 feet at the gables, and about 26 feet 4 inches at the eaves, and is divided into three stories; the first of which is 11 feet in height, the second 9 feet, and the third 8 feet. The whole is lighted with about 60 windows, all of which have iron mullions. The weight of the whole will little exceed 80 tons.—*Manchester Examiner.*

Transactions of Scientific Bodies.

MEETINGS DURING THE ENSUING WEEK.

THIS DAY	Asiatic—5, New Burlington-street	2 P.M.
	Royal Botanic—Inner Circle, Regent's Park	8½ P.M.
MONDAY	Statistical—12, St. James'-square	8 P.M.
	British Architects—16, Grosvenor-street	8 P.M.
	Medical—3, Bolt-court, Fleet-street	8 P.M.
	Pathological—21, Regent-street, Waterloo-place	8 P.M.
TUESDAY	Medical and Chirurgical—53, Berners-street	8½ P.M.
	Civil Engineers—25, Great George-street	8 P.M.
	Zoological—11, Hanover-square	3 P.M.
WEDNESDAY	Society of Arts—Adelphi	8½ P.M.
	Geological—Somerset House	8½ P.M.
THURSDAY	Royal—Somerset-house	8 P.M.
	Antiquaries—Somerset-house	8 P.M.
	Royal Society of Literature—4, St. Martin's-place	7 P.M.
	Numismatic—41, Tavistock-street, Covent-garden	3 P.M.
FRIDAY	Royal Institution—Albermarle-street	8½ P.M.
	Philological—London Library, 12, St. James's square	8 P.M.
SATURDAY	Westminster Medical—17, Saville-row	8 P.M.

INSTITUTION OF CIVIL ENGINEERS.

JANUARY 15.—WILLIAM CUBITT, Esq. (President), in the Chair.

The paper read, was "An Account of the Blackfriars Landing Pier," by Mr. F. Lawrence. This pier commences on the Middlesex side of the river, to the east of Blackfriars-bridge, at Chatham-place, and continues parallel to the bridge, and at a distance of 40 feet from it, for a length of 185 feet. The body of the pier (exclusive of the head) is supported on four piers, two of which consist of a single row, and two of a double row of piling, forming three spans of 50 feet each, and having about 8 feet headway under them at high water. The floating barge, or dumby, on which the passengers land, is 100 feet long and 25 feet wide, rising and falling with the tide, in grooves at each end, formed by piles and protected by dolphins. The connection between the dumby and the pier is by a moveable stage, 8 feet wide and 50 feet long, secured to the pier head, at one end by a hinge joint, and the other end similarly connected to a flight of steps on wheels, which moves on a tramway fixed to the deck of the barge. The principal portion of the timber used in its construction was fir; but the whole, whether of fir or oak, was impregnated by Payne's process, those portions below high-water mark being further protected by a coating of Stockholm tar. The whole of the cast and wrought-iron work was galvanised.

The Corporation of London had observed the necessity for an improved landing place so early as 1841; but it was not until a fatal accident occurred in 1844, that any decided steps were taken in the matter; then Messrs. Walker and Burges received instructions to prepare a design, which was approved, and the pier was commenced in March, 1845, and completed in October of the same year, under the superintendence of Mr. Hewett, M.I.C.E. The total cost was about 4000*l.*

The next paper read was a "Description of a Timber Bridge erected over the River Ouse, on the line of the Lynn and Ely Railway," by Mr. J. S. Valentine, M.I.C.E. The total length of this bridge was 450 feet, divided into 11 bays, ten of 30 feet span each, and one over the river of 120 feet span on the square, and 121 feet 6 inches on the skew. The river opening consisted of three laminated timber bows, resting upon stone piers, the material for which was procured from the New Leeds Quarries. The dimensions of the bows were—length of chord, 121 feet 6 inches; versed sine, 14 feet 2 inches; and their depth, 3 feet 8 inches; the width of the outer bows was 2 feet 2 mches; that of the centre bow 2 feet 9 inches. They are formed of 15 layers of 3-inch deals, abutting upon a cast-iron plate, bolted to the tie beams, which consisted of two whole timbers scarfed and bolted together. Each tie-beam was suspended from the bows by 13 wrought-iron rods, 2 inches in diameter, and between these diagonal struts were fitted. Transverse joists, notched on to the tie-beams, extended across the whole width of the bridge, and on these the rail bearers were laid, the intervening spaces being filled with 3-inch deals, laid longitudinally. The works were commenced in the autumn of 1846, and completed in October, 1847; the total cost of the superstructure being about 3744*l.* When tested, by placing three locomotive-engines on each line of rails, the total deflection was only three-eighths of an inch.

The paper announced to be read at the meeting of Tuesday, January 22d, was No. 819—"On the Periodical Alternations and Progressive Permanent Depression of the Chalk Water Level under London," by the Rev. J. C. Clutterbuck.

CALIFORNIA—ITS PRODUCE AND PROSPECTS.

At the Society of Arts, on Wednesday evening last, a paper, on the interesting subject of "California, its History and Prospects," was read by Mr. A. WALLS, of Lime-street. The details were communicated to Mr. Walls by Alexander Cross, Esq., of Valparaiso, who had been some time in California, and had lately visited England, but the shortness of his stay prevented him from relating his experience himself; and Mr. Walls represented him on this occasion, detailing a statement of facts as furnished by Mr. Cross and Lieut. Larkin, the United States Consul at San Francisco. It commences with a geographical description of Upper California, situated on the western continent of North America, extending between 690 and 700 miles from north to south, and about the same from east to west, and covering an area of 350,000 square miles. In 1846, the population was estimated at 14,000, which, in 1849, had increased to about 37,000, exclusive of Indians; in the present year the number would probably reach 90,000.

The Indian population generally were peaceably inclined, and willing to be instructed in the arts of civilisation. Along the sea coast, and in the valleys, the climate was genial and healthy, excepting about two months, when winter and the rains set in; and the country, generally, was highly fertile for grain and timber. The most luxurious district in all California was over a distance of between 20 and 30 miles between Monterey and Benicia, which surpassed in fertility any other part of the country yet discovered. Mr. Walls then read an extract from a small work published by a Mr. Bryant, in which Dr. Marsh's description of some of the rivers and streams flowing from the Sierra Nevada and the Snowy Mountains were given, in the sands and valleys of which gold was found. The quantity of gold obtained in 1849 greatly exceeded that of 1848, but individual gains had not been so large; many Americans had 20 or 30 Indians working for them at regular wages, and some of them realised much wealth; persevering industrious individuals often obtain 3 ozs. of gold dust per day.

From the desertion by the crews, a large number of vessels were laid up in the Bay of San Francisco, and though foreign merchandise sold at unheard of prices, and continued high until May, 1849, they are now suffering a rapid decline, and enormous sacrifices would have to be made; in fact, large quantities of goods would scarcely sell for sufficient to pay the duties, from being obliged to have recourse to forced sales. Among the gold-seeking adventurers, there were many to be seen thoroughly broken down, ruined, and wretched in the extreme. There were no dwellings; fever and ague prevailed, and it required a very strong constitution to get through the difficulties of a season. One party of young men, who had gone out from San Francisco exploring, had discovered gold 500 miles north of that place; and Mr. Walls here read an extract from a young man to his friends in New Orleans. It stated that, during the first five weeks he had been in California, he had not washed sufficient gold to pay expenses, but had luckily hit on a deposit, or hole, which would probably realise him $10,000; his best day's work was $400; second, $150; and several days he had made $100. His living cost $1½ per day, consisting of pork, beef, bread, tea, coffee, wine, &c. Some few get rich in a few weeks, but the generality remain poor, spending all they obtain in gambling, drunkenness, and riot; and the writer prophesied that there would be shortly more poverty and distress in California than in any other state of the Union.

It was his determination to work steadily for two or three years, make all he possibly could, and retire to his native State. There was every chance for healthy, steady, and persevering men doing well; no others should go to California. The different methods of obtaining gold was then alluded to, some preferring washing the alluvial soil, others devoting themselves to picking it out from its native matrix—the rocks—and some fishing up the sands from the beds of the streams for washing. Among a variety of samples of gold from various countries was a most magnificent specimen, exhibited by Mr. Walls, weighing 6 lbs. 8 ozs. 14 dwts. 12 grs., said to be the largest and purest lump yet received from California. It is perfectly amorphous, the size of a small human hand, much water-worn, composed of nearly pure gold, having only on its surface a very few broken crystals of quartz in the hollows as they existed in the matrix, and, at 45*l.* per pound, would be worth intrinsically about 300*l.*; but, from its extraordinary character, as a specimen, is valued at far above that sum. At the conclusion, the thanks of the society was voted with applause to Mr. Walls for his interesting paper; and the CHAIRMAN requested Mr. Tennant to offer a few remarks.

Mr. TENNANT said, the peculiar character of the specimen before the meeting consisted in its extreme purity; in general, it was desirable to have some of the matrix present to enable us to judge of the parent rock. Of course, he did not say this in disparagement, as it was a most magnificent specimen, and far eclipsed one which he had purchased a few days since, which was in a glass case on the table; that, however, was a rare specimen, weighing 9½ ozs., and perfectly pure. He (Mr. Tennant) said he thought the gold seekers, in their anxiety after the precious metal, were throwing away produce of still more value. In some specimens, he had detected crystals of garnet, grains of platina, &c.; and he had no doubt diamonds were to be found in the *debris* of the Californian rocks; if so, and only fit for use as diamond dust, it was worth 50*l.* per oz., and would well repay patient research. With respect to the quantity of gold obtained from that country, it was to a much greater extent than many persons imagined; one house in London had received from that source alone, within the past 12 months, no less than 10 tons of the precious metal. He (Mr. Tennant) further said that many portions of the rocks of our own islands produced gold; it was now being extracted in Wales and Ireland, and he had himself obtained specimens from the strata at Glencoe, in Scotland, in a brown auriferous iron pyrites. He recommended parties going on an excursion for a few days, or weeks, particularly young men pursuing their studies, to shoulder their knapsack, with their geological hammer, magnifier, and a few tests, and go pedestrian-fashion, independent of custom, and search the rocks and strata of the various beautiful and romantic districts of our own highly-favoured country, which was not exceeded, in his opinion, by any scenery in Europe. The Wye, the Dee, the Tame, and other rivers in Wales, he considered superior to the Rhine itself; and while they could obtain an excellent supper, bed, and breakfast, in the road-side villages, for a mere trifle, they would preserve their health, and gather much useful knowledge.

A vote of thanks having been passed to Mr. Tennant, Mr. EVAN HOPKINS proceeded to detail some of his experience in the gold-producing districts of South America. He had examined the detritus of the whole range of rocks from Choco to the Amazon, as well as northwards to Panama, and had always found gold, but generally not in sufficient quantities to pay for extraction. The spots most prolific were pools and hollows in the ravines, which being filled in the rainy season by the decomposed matter washed from the surface and fissures of the rocks of the auriferous ferruginous granite, or micaceous schist, the gold, from its high specific gravity, with the heavier sands, became deposited there, and it was only such deposits which would pay for the employment of capital for its extraction. Mr. Evan Hopkins also noticed that the mines belonging to the St. John del Rey Mining Company were in an enormous vein, formed by the filling up of a ravine in a similar manner, with a ferruginous iron pyrites. In answer to Mr. Walls, he (Mr. Hopkins) explained that while gold was found mechanically mixed with the material of the rocks in grains or lumps, silver was found in north and south veins, containing generally quartz and silver, sometimes native, but more plentifully as a sulphuret, chloride, muriate, arseniuret, &c. They were obliged to arrange their reduction apparatus to reduce the sulphuret, as being the most general, and he had always found the barrel amalgamation the most economical.—Mr. Hopkins sat down amid much applause, and the whole proceedings appeared to give much satisfaction to a crowded audience.

TRING, READING, AND BASINGSTOKE.—On Monday, the Master in Chancery, Richards, proceeded with the consideration of the claim of the official manager to the estate, for the recovery, on behalf of the shareholders, of a sum of 6300*l.*, advanced by the directors as an investment of the funds of the undertaking to Messrs. COX and Son, the company's stockbrokers, and who gave an undertaking to repay it with 5 per cent. interest, but which engagement they had not fulfilled. Mr. Daniel appeared for Mr. Wright, the official manager, and for the shareholders; and Mr. Folkes for Messrs. Cox and Son. Hon. F. H. F. Berkeley, formerly chairman of the company, was examined, to show that he, in conjunction with two other directors, had signed a cheque for the amount on the bankers; and Mr. Green, the secretary, gave evidence with reference to the books of the company. Should the Master decide that the 6300*l.* be re-paid, and be placed to the company's credit, it will have the effect of increasing the return of 10s. per share already declared receivable by the shareholders, by 5s. or 10s. more.

GRAND TRUNK AND STAFFORD AND PETERBOROUGH RAILWAY.—On Tuesday, the winding-up of the affairs of this company was proceeded with by the Master in Chancery, Brougham. From the report of the official manager, Mr. Turquand, and Mr. Gedy, solicitor to the estate, it appeared that the subscription agreement was signed for 16,535 shares, and that 37,457*l.* was received by the provisional committee. A return of 1*l.* 1s. per share, and a further return of 2s. 6d. per share out of the 2*l.* 2s. deposit, had been paid back to the shareholders; but during the payment of the second instalment it was discovered that a fraud had been committed on the company by the presentation of 1500*l.* of scrip, which had been improperly obtained by some party from one of the scrip books without payment of any deposit, and that the return of 1*l.* 1s. per share had been made thereon, amounting to 1564*l.* It was also discovered that the return of 1*l.* 1s. and of 2s. 6d. per share, had been made on 200 shares which had been purchased by the directors with the funds of the company, and that the amount had been received by the secretary, who cannot be found. About 1500 shares were allotted among the provisional committee, on which they paid deposits to the extent of only 869*l.* The general expenses of proceeding as far as standing orders, were 15,302*l.* The liabilities are found to amount to 1091*l.*, and the assets, including 1564*l.* sought to be recovered from the directors on the spurious scrip, and from the secretary, 2492*l.*, the balance at the bankers, received by the official manager, being 48*l.* Two calls of 5s. per share respectively have been made on the contributories, to pay off the liabilities, and the expenses connected with the winding-up of the affairs.

ROYAL INDIA AND AUSTRALIA STEAM-PACKET COMPANY.—The winding-up of this company's affairs came on before the Master in Chancery, Blunt, at his court, Southampton-buildings, Chancery-lane, on Wednesday, on the petition of Mr. J. Yates, of Cornhill, and Mr. R. Ford, master mariner, holders of 100 shares each, and two of the directors. The petition represented that the company was started in 1847, for the establishment of a regular communication between Great Britain, the East Indies, Australia, New Zealand, and other intermediate ports. It was incorporated by Royal charter, with a capital of 100,000*l.*, in 5000 shares, of 20*l.* each, with power to augment. It was to be lawful for the directors, whenever a loss of a least 75 per cent. on the capital for the time being subscribed had been incurred, to call a meeting to dissolve; but this could not be done, as it was found impossible to convene a sufficient number of shareholders who had paid the calls to constitute a legal meeting. The directors made calls, but the shareholders refused to pay them. Business was carried on until April, 1849, when the affairs became embarrassed. From the report of Mr. Coleman, the official manager, presented on Wednesday, it appears that 12,633 shares were applied for and allotted, of which only 3720 shares were paid upon, amounting to 3211*l.* The debts now due amount to 4827*l.*; assets in hand, 497*l.*; expenses from commencement, 7540*l.* The list of contributories liable to a call has been settled in respect of all those shareholders who signed the deed, and of those who paid the preliminary deposit, but who did not sign the deed. About 242 shares were taken in Madras, and 81 in Ceylon, and these have to be considered. The total number of shares not included in the list of contributories is 5925. This arises from their being considered bad, those to whom they were allotted being dead, insolvent, or abroad.

THE LANCASTER AND NEWCASTLE DIRECT RAILWAY.—The winding-up of this company's affairs came on on Thursday before the Master in Chancery, Tinney, on the petition of Thomas Wearing, of Sedburgh. It stated that the proposed capital was 2,000,000*l.* in 100,000 shares of 20*l.* each. Many persons applied for shares, and those to whom they were alloted paid a deposit of 2s. 6d. per share, but the amount was wholly insufficient to pay the debts that were contracted, and for which the petitioner and others are now being sued at law. The projector, it appears, has since become insolvent, and it was resolved that each provisional committeeman should contribute 30*l.* to defray the expenses, but as only some paid their quota, creditors commenced actions, some of which have been settled, and in others judgments have been obtained. The Master ordered that Mr. Cowburn, the registered solictor to the company, should make out for the next meeting particulars of the lieu he claims to hold on the books and papers of the company he refuses to give up, without which the official managers cannot proceed with the dissolution.

FALMOUTH, HELSTONE, AND PENZANCE RAILWAY.—On Thursday the Master in Chancery (Sir George Rose) appointed Mr. Spiller, of Basinghall-street, official manager for the winding up of this company's affairs, the debts and liabilities in connection with which amount to upwards of 5000*l.*

DIRECT EXETER, PLYMOUTH, AND DEVONPORT.—Yesterday the winding up of this company's affairs came on before Sir William Horne, the Master in Chancery. Mr. Roxburghe appeared as counsel for Mr. Sandeman, the official manager; and Messrs. Tyrell, Fockes, and others, as counsel for the provisional committee. The proceedings in the case have been delayed, owing to the refusal of Mr. Floud, the projector and solicitor, to give up the books and papers, on which he claims a lien in respect to his bill of costs, amounting to 1500*l.* Yesterday the Master ordered that his bill be referred for taxation, and that, on the official manager paying over to him the amount of his claim out of the first moneys received, he surrender the books and papers. The list of contributories were then proceeded with. The first contained the names of the committee of management: Major Durban, Colonel Ellis, J. L. Bastard, J. E. Kingdon, B. Salter, W. H. Tanner, and E. Woolmer, who were placed thereon as contributories, liable to a *pro rata* payment to discharge outstanding liabilities. The second list contained the names of thirty-nine provisional committee-men. The first, that of Major Arden, was taken—the decision in his case to be taken as applicable to the others. Messrs. Tarrant and Floud were sworn, and gave evidence at great length to show that these thirty-nine gentlemen acted in the capacity of provisional committee-men, and were liable to assessment as contributories. From the evidence it appeared that the first meeting to inaugurate the scheme was at the house of the solicitor; that the nine and thirty provisional committeemen gave letters of consent to act, and that a great many others volunteered and applied by letter to act also. Immediately on the appearance of the "panic," when witness Floud disposed of all the shares he had, the committee of management, anxious to know if they were liable for the engagements of the company, took Mr. Chitty's opinion, who decided that they were so if they had consented to have their names on the prospectus. A sum of 3s. per share was paid by some to discharge debts, but the majority refused. By some arrangement between the solicitors, creditors in town commenced suing creditors in the country and members of the committee, and one of the solicitors, in this way, brought an action against his own client. The company existed two months, during which period applications for shares poured in to the extent of 40,000, but the "panic" prevented the payment of the deposits. Applications were made for costs on the part of those who had come up from Exeter, but this was refused, on the understanding that the parties were in the position of suitors who attend the Courts of Chancery from day to day.

EXPORTATION OF THE PRECIOUS METALS.—The following are the official returns of the exports of gold and silver from the port of London for the last week:—Silver coin to Dunkirk, 80,000 ozs.; ditto to Belgium, 130,000; ditto to Rotterdam, 5000 Silver bars to Belgium, 23,000.—Making a total export of 238,000 ozs. in coin and bars.

CURRENT PRICE OF GOLD AND SILVER.

Foreign gold, in bars	per oz.	£3	17	9	New dollars	per oz.	£0 4 10½
„ Portugal pieces		0	0	0	Silver in bars (standard)		0 4 11½

IMPROVED METHOD OF PRODUCING IRON AND STEEL.

In the last Number of our Journal we gave a brief abstract of Sir F. C. Knowles's specification for the production of iron and steel direct from the ore; but, as the subject is of some importance, we proceed to give a more detailed description of the invention. For the first process—that of making the iron direct from the ore, without any previous smelting—the patentee selects those ores most free from earthy matter, and the nearer they approach to pure oxides the better. For another process—the preparing iron ores by cementation in retorts, to make cast-iron, by smelting afterwards—the ores are taken indifferently, excepting such as contain much sulphur and arsenic. They are first broken into pieces of moderate size, so as, when placed together in a heap, there may be interstices between them capable of admitting a gas, or vapour, through them without obstruction. They are then placed in retorts, rendered gas-tight, and brought up to a red-heat, each of which is connected with gas-tubes, having stop-cocks for the purpose of injecting and regulating a current of gas among the ore. For this purpose two sorts of gases are used by the patentee—common carburretted hydrogen, or coal-gas, and carbonic oxide prepared by slow combustion of charcoal, or coke. The patentee does not confine himself to coal-gas, but employs any hydro-carbon which can be produced economically. When the retorts are charged, and the gas generated, the rationale of the process will be as follows:—The ore being mainly an oxide of iron, the hydrogen of the hydro-carbon unites with the oxygen of the ore to form water, while the carbon unites with another portion of oxygen, forming carbonic oxide or carbonic acid, as the case may be, leaving metallic iron as the result. The ore being so far reduced, the next stage of the process, when malleable iron is the proposed product, is to shut off the gas on both sides of the retorts, and transfer the contents of the retorts to the puddling-furnace, where the iron is treated in the common way. It may be cut, piled, re-heated, and rolled as usual, according to the nature of its distinction or quality required. If steel be required, the cementation must be carried further, until the reduced metal has absorbed about 1 per cent. of carbon. The reduced and cemented ore is then put into crucibles, or melting pots, to be run down into ingots, in wind-furnaces, as is now done in the making of cast-steel. If the earthy matter in the ore require it, some proper flux is to be added, according to the usual method of fluxing iron ores. If cast-iron be required, the cementation must be carried on until about 3 or 4 per cent. of carbon is absorbed, after which it is transferred to the blast-furnace, with a proper flux. The patentee further claims, where cast-iron or steel is the product required, the separate cementation of iron ores with charcoal, coke dust, anthracite coal, coke, &c., on the following iron ores:—Pure specular ore, red and brown hematite, black oxide, red and brown ochreous ores, magnetic iron ores, spathose ores, being carbonates of protoxide of iron, and different from the argillaceous iron ores of the carboniferous series of rocks above the mountain limestone. Lastly, the patentee claims the use of spathose iron ores and "soft mine" as a flux, to supersede the use of limestone; the ore is first roasted, to drive out the carbonic acid, and then mixed with other ores in such proportion that the lime contained in the aggregate may bear a due proportion to the silica and alumina in the other iron ores to be smelted.

Since writing the above, we have been favoured with a proof of a letter which appears in the *Mechanics' Magazine* of this day, of which the following is the substance. Sir Francis must excuse us for having taken some liberties with his communication, but so many abstruse algebraical calculations only render the subject difficult to a general reader, and are by no means suitable to a publication like the *Mining Journal*:—

SIR,—In reference to the specification of my patent processes for the preparation and treatment of the ores of iron, and for the conversion of some of them directly into malleable iron and steel, published in the last Number of this Journal, it may not be uninteresting to its readers to be made acquainted with the principles on which, more particularly in an economical point of view, as well as chemically, those processes are founded. I was first led into the train of thought which terminated in the most important part of this invention by the fact, that coal, in the process of coking, whether in coke-ovens, or in the blast-furnace, as raw coal, loses a very large portion of its weight in the form of gaseous matter, composed chiefly of carbon and hydrogen; and by considering the well-known superior deoxidizing and cementing power of these elements in the aeriform state, as compared with their solid and crude condition in coke, or bitumenous coal. This loss is enormously increased by the action of the blast on the materials in the lower parts of the blast-furnace, so much so, that Profs. Playfair and Bursen, in their very elaborate and exact analysis of the gases evolved from blast-furnaces where raw coal is used, compute the waste at 81·54 per cent. of the entire weight of the coal, to say nothing of the other valuable products equally lost in this branch of manufacture.

On the other hand, when we regard the minerals employed in making iron, we find that we have restricted ourselves to a comparatively narrow field, however conveniently situated, and that containing ores the poorest, the most infusible, and the most contaminated with earthy matters—the rich ores, where used at all, entering merely as a subsidiary element, and in quantity comparatively small. Indeed, the very pure ores of iron of Great Britain may be said to be wholly neglected, though, in point of richness and purity from all noxious combinations, they may challenge comparison with any ores in the world. I have before me samples of British iron ore, which certainly do not contain 1 per cent. of anything but iron and oxygen. Thus, we waste by millions of tons annually carbonaceous fuel purer than any charcoal, as well as more powerful in chemical action, and we neglect minerals of the finest quality which this fuel will reduce; while we depend on foreign countries for our supply of pure iron for finer purposes, and for the raw material of our steel manufactures, because (we say) charcoal is a fuel so dear in this country! It is to hoped that this reproach will not much longer attach to a nation pre-eminent for chemical science, and its practical and technical applications.

Powerful vested interests are, no doubt, opposed to a change in the old methods; but the history of the useful arts in Great Britain proves that such interests are, in the long run, powerless when opposed to real and solid improvements. It would be too much to claim such a character for the above processes before they have been submitted to the severe and very proper test of the largest scale of manufacture; but it may not be presumptuous to say, that the attempt is in the right direction, and to predict that time and experience will lead to its ultimate success, even though it may be in other, abler, or more fortunate hands. The attempts of Mr. Clay, of Mr. Heath, and of Mr. S. B. Rogers, of Nantyglo, and others, all men of science and of practical acquaintance with metallurgy in iron, evince a rational conviction in minds best qualified to judge of the probabilities of the case, that the solution of this great practical problem is not only possible, but it may be nearer at hand than we have hitherto supposed. As to the vested interests involved, it is to be hoped that the changes required to be made will be less than at first sight we may be disposed to think; for by judicious arrangements in the modifications and adaptation of the present buildings and machinery, the whole effect of the introduction of this new method may be to separate the production of cast-iron and of malleable iron into two distinct and independent departments, the coke resulting from the making of gas for the malleable iron department being consumed in the blast-furnace, or cupola, for the production of cast-iron. Even the fineries will be applicable to the smelting of the cemented iron ores; so that the coke ovens alone will be displaced or so modified as to serve for kilns to heat the retorts. The habits of the workman also—a very important consideration—will not be much interfered with; the greater part of the changes being in the nature of addition to the present methods rather than of modification of them. I draw attention to these particulars, because it is at all times of the most serious importance to introduce new methods with as little disturbance, or shock, to existing interests and habits as is compatible with the progress of improvement in the arts. In cases in which the proprietors of new works should confine themselves to the making of malleable iron only, the surplus, or residuary coke, after the heating of the retorts and of the puddling and other furnaces, will find a ready market for the use of locomotive engines or railways. The effect on agriculture produced by the saving of the now wasted ammonia from above 300 blast-furnaces will be prodigious.

With these preliminary observations, I pass on to the details of the process of cementation by coal gas. The weight of 100 cubic inches of coal gas is about 18 grains, the weight of 100 cubic feet will, therefore, be 18×12^3, or in pounds avoirdupois, $\frac{18 \times 12^3}{7000}$ The gas yielded by 1 ton of good bituminous coal may be taken at 9200 cubic feet, or 92×100; therefore, the weight of this gas (dividing by 100) will be $\frac{18 \times 12^3}{7000} \times 92$, or 409 lbs. nearly. We have now to compute the carbon and the hydrogen contained in this weight. The formula which tolerably well represents the composition of coal gas is 6 C + 2 H, and, therefore, the ratios of the carbon and of the hydrogen to the whole weight will be represented by the forms $\frac{6\,C}{6\,C+2\,H}$ and $\frac{2\,H}{6\,C+2\,H}$ respectively, and as C is = 6 and H = 1, the carbon will be found to be $= \frac{36}{38} \times 409 = 387$ lbs., and hydrogen $= \frac{2}{38} \times 409 = 22$ lbs. The formula for carbonic acid gas being C + 2 O, the ratio of the carbon to the oxygen required to form carbonic acid will be $= \frac{C}{2O}$ or $\frac{6}{16}$, and the oxygen thus taken up will be $= \frac{16}{6} \times 387 = \frac{8}{3} \times 387 = 1032$ lbs. The formula for water being H + O, the ratio of the oxygen to the hydrogen will be $\frac{O}{H} = \frac{8}{1}$, and the 22 lbs. of hydrogen will, therefore, take up 8×22 lbs. = 176 of oxygen. The total of oxygen neutralised will, therefore, be 1208 lbs. avoirdupois.

By the formula for the pure peroxide of iron being 2 F + 3 O, neglecting the earthy matter, we find the reduced metal corresponding to 1208 lbs. of oxygen, will be equal to $\frac{7}{3} \times 1208 = 2815$ lbs., or 1¼ ton nearly. The gas now wasted from one ton of coals is, therefore, such as will chemically reduce to a metallic state 1¼ ton of iron. The modifications introduced in respect of earthy combinations, are easily computed when the yield of the ore is known. If we take 3 tons of pig-iron as the average amount of coal used, *the gas from this* will turn out 3¾ tons of malleable iron, leaving above 2 tons of coke to be employed in heating the retorts and the puddling-furnace, &c.: to this is to be added the coal saved in the fining process, its engine, &c. If the ore is a simple peroxide, the coal saved in roasting will have to be added. The computations for the use of carbonic oxide are analogous to the above, and can be readily performed by your readers for themselves.

I shall take an early opportunity, when some experiments on an adequate scale have been completed, of sending you an estimate of the comparative cost of producing bar-iron by this and by the present process.

Of the previous cementation of ores intended to be smelted for the production of cast-iron, I need only observe, that it will be found to lead to a great saving of fuel, and a more uniform working of the furnace, and that by means of it grey metal may be obtained from ores which cannot at present be smelted, or, at least, smelted alone.

The proportion of fuel being about one-fifth in gaseous matter due to coking, and four-fifths in all being wasted, that appliable as fuel in the form of carbonic oxide to heat the retorts, &c., will be three-fifths; and it may be estimated that, with scarcely any additional fuel, 3¾ tons of malleable iron reduced directly may be made for every one ton of pig-iron from the blast furnace, assuming three tons of coal to the ton of pig-iron. As in this process the gas is freed from sulphur, it will bring into use coals which are unfit for making iron from their large admixture with sulphur, but are highly bituminous, and which in the South Wales basin are associated with black band.

F. C. KNOWLES.

THE APPLICATION OF IRON TO RAILWAY STRUCTURES.

It will be recollected that in May, 1847, the Dee Bridge, on the Chester and Holyhead Railway, an iron structure, gave way when a train was passing over it, and that a frightful loss of life ensued. In consequence of this lamentable accident, and of the conflicting opinions expressed by the most eminent engineers as to the cause, Mr. Strutt, president of the Commissioners of Railways, recommended the Government to appoint a commission, to inquire into the effect of concussion and vibration upon the strength of cast-iron, and to examine the action of weights moving over bridges subject to deflection compared with the action of the same weights at rest. A Royal Commission was accordingly issued on the 27th Aug., 1847. appointing Lord Wrottesley, the Rev. R. Willis, Capt. James, Mr. George Rennie, Mr. William Cubitt, and Mr. Eaton Hodgkinson, commissioners, and Lieut. Douglas Galton, of the Royal Engineers, as secretary. A sum of about 3000*l.* was placed at their disposal, to enable them to make the necessary experiments, but it does not appear that these gentlemen have received any remuneration whatever for their services.

From their report, which has just been issued, it appears that Mr. Eaton Hodgkinson (who has paid great attention to experiments on iron, and who assisted Mr. Stephenson and Mr. Fairbairn in the trials for the great tubular bridges) undertook to make the necessary experiments on statical pressure and impact. Prof. Willis, Capt. James, and Lieut. Galton, of the Royal Engineers, conducted the experiments on the effects of weights moving with different velocities, as also those produced by long continued reiterated flexure of bars of iron. The first experiments were carried on in premises hired for the purpose in Lambeth, and the latter in the dockyard at Portsmouth. The results obtained from the experiments made with weights moving with velocity are entirely new. The mathematical investigation has been found, unfortunately, so complicated that the commissioners have only been able to obtain a partial solution of the question, although they have had the assistance of Prof. Stokes, the most accomplished analyst in England. These experiments show that an increase of deflection, over the statical deflection, or deflection produced by a load at rest, was obtained by motion being given to the load, and that this deflection increased with the increase of velocity up to a speed which would not allow time for the mass of the bridge to be set in motion. It also appears that when motion is given to the load, the points of greatest strain are not at the centres, but nearer the extremeties. The amount of the increase of deflection appears to vary directly as the square of the length of the bridge, and inversely as the product of the central statical deflection, and the square of the velocity with which the load passes the bridge, and is increased by the *inertia* of the bridge up to that point where the velocity becomes so great that the time occupied in the transit is not sufficient to allow of the bridge being further deflected. To apply this law to practical cases, a bridge on the South-Eastern Railway, and another on the Epsom and Croydon line, were experimented upon, and the commissioners obtained results which fully corroborate the experiments made on a smaller scale. The increase of deflection, when the amount of *inertia* of the bridge is taken into account, is shown to be much greater for short bridges than for long bridges. Supposing, for example, the mass of the load and bridge to be nearly equal, the increase of the deflection at high velocities, and for bridges of the ordinary degree of stiffness, may be more than one-half the statical deflection; whereas for bridges of 50 feet span it will not be more than one-seventh, and will rapidly diminish as greater lengths are taken. This curious and complicated investigation is described in the report, and fully detailed in the appendix. The commissioners have likewise obtained evidence relative to the opinions and practice of the most eminent engineers of the day, and an admirable analysis and very complete summary of this evidence is given, and a great many of the experiments made for Mr. Stephenson, to assist him in determining the form of the Conway and Britannia Tubular Bridges, have also been added in the appendix. The experiments made on impact (given in appendix A) are both new and interesting, demonstrating practically, what was already known theoretically, that the power to resist impact varies with the mass of the body struck.

This, the first scientific report issued by a Government commission, forms a most valuable addition to the engineering science of the day, and will be found to contain much useful information on a subject upon which, in practice, not only a great want of uniformity exists, but upon which engineers at present are unable to apply principles with confidence. The Commissioners are of opinion that any legislative enactment, with respect to the forms and proportions of iron structures on railways, would be highly inexpedient, and they confine themselves to directing attention to the following general conclusions arrived at from the experiments made, and the information collected by them in the course of the inquiry:—

That it appears advisable for engineers in contracting for castings to stipulate for iron to bear a certain weight, instead of endeavouring to procure a specified mixture. That to calculate the strength of a particular iron for large castings, the bars, used as a unit, should be equal in thickness to the thickest part of the proposed casting. That, as it has been shown that to resist the effects of reiterated flexure, iron should scarcely be allowed to suffer a deflection equal to one-third of its ultimate deflection, and since the deflection produced by a given load is increased by the effects of percussion, it is advisable that the greatest load on railway bridges should in no case exceed one-sixth of the weight which would break the beam when laid on at rest in the centre. That, as it has appeared that the effect of velocity communicated to a load is to increase the deflection that it would produce if set at rest upon the bridge; also that the dynamical increase in bridges of less than 40 feet in length is of sufficient importance to demand attention, and may, even for lengths of 20 feet, become more than one-half of the statical deflection at high velocities, but can be diminished by increasing the stiffness of the bridge; it is advisable that, for short bridges especially, the increased deflection should be calculated from the greatest load and highest velocity to which the bridge may be liable; and that a weight which would statically produce the same deflection should, in estimating the strength of the structure, be considered as the greatest load to which the bridge is subject. Lastly, the power of a beam to resist impact varies with the mass of the beam, the striking body being the same, and by increasing the *inertia* of the beam without adding to its strength

the power to resist impact is, within certain limits, also increased. Hence it follows that weight is an important consideration in structures exposed to concussions.

Whilst, however, we lament that the limited means which have been placed at our disposal, and the great time required for such investigations, have compelled us to leave in an imperfect state, or even to neglect altogether, many interesting and important branches of experimental inquiry, we trust that the facts and opinions which we have been enabled to collect will serve to illustrate the action which takes place under varying circumstances in iron railway bridges, and enable the engineer and mechanic to apply the metal with more confidence than heretofore.

A number of plates accompany the report, illustrating the manner in which the several experiments were made, and drawings of different descriptions of girders and bridges referred to in the report are attached; as also a map prepared by the officers of the Museum of Practical Geology, showing the districts in the kingdom where iron is found and worked, and upon which all the principal furnaces now in blast are marked.

Original Correspondence.

WHAT IS, AND WHAT IS NOT, THE COST-BOOK SYSTEM?

SIR,—When I had the honour of addressing you upon the Cost-book System, a fortnight ago, I did so purely upon public grounds; I had no intention of referring *by name* to any particular company; but your correspondent of last week, in replying to my letter, refers to the system adopted by the *West Polgooth Company*, as one embracing the privileges of the primitive cost-book, with one or two accompaniments, which he requires me candidly to acknowledge to be "improvements."

That the cost-book has been made the means of perpetrating great abuses I do not deny, I have exposed them too often in your columns to do that; but that the genuine principle of the cost-book, as lately adopted by several mines, can be improved upon in regard to its simple arrangements, and *safety* to adventurers, I do deny, and shall, on some future occasion, explain the system more fully than I did in my last. At present, time will only permit me to notice hastily the "improvements" introduced by your correspondent. I have nothing to say in regard to the West Polgooth; the directors, I doubt not, are respectable and responsible men, and, for aught I know to the contrary (not having the prospectus at hand to refer to their names), fully qualified to carry out what they propose, and to superintend, from *personal knowledge*, the management of an extensive mine. With these remarks, I dismiss from the controversy the *West Polgooth Mining Company*, and shall confine myself solely to the system of the self-styled "improvement" of your correspondent, and doubt not I shall be able to convince the public, at least, that it is open not only to the defects I named in my former letter, but to others equally, if not more, pernicious. Your correspondent, in the first lengthy paragraph of his letter, does not attempt to deny my definition of the legitimate cost-book, and, therefore, confines himself to a simple quibble upon the word "shareholder," which he more than once blames me for using, and, as a specimen of his consistency, signs himself by the very name.

The "improvement" upon the Cost-book System, which your correspondent introduces, is this—A board of directors sign the Cost-book, and are, therefore (as he says), alone liable for all expenses in prosecuting the mine; but, generous-hearted people! they, for a consideration, issue "contract notes" to the public for 5*l.* per share, binding themselves to admit the holders of them to a participation in the adventure, whenever they choose to register—stipulating, by-the-way, that *on the payment of a dividend, all shall register and sign the book.*

I believe that, under the old "scrip" system, it was proved that a person holding "scrip" (contract notes), or attending a meeting of shareholders, was liable for debts contracted during the period it was proved he held the scrip; and now supposing, under the model improvement system, the original directors back out of the concern, become unfortunate, are unable to meet the engagements of the mine, or fifty other things I could mention, am I to be told by your correspondent that the directors would be ignorant of the names of the parties to whom the "contract notes" were issued? or that the creditors could not get possession of them, and prove them to be shareholders to all intents and purposes? So much for the non-liability of shareholders under the new system.

I have, and so have you, Mr. Editor, known a mining company (with great names in it, too) pay large dividends, and then stop with 3000*l.* debts upon it—investigation proving, moreover, that the dividends had been paid from *borrowed money*. I do not believe that anything of the kind will ever occur again (indeed it cannot under the system I advocate); but, under the "improvement," a dividend would, at least, bring in the "contract notes;" and we do not want a system that can admit of even a "*possibility*."

In my former letter, I illustrated my objection to the new plan by the case of Mr. Greenhorn, and will now, with your permission, give you a hasty sketch of a company which might, some day or other, be formed upon the "improvement" system, as advocated by your correspondent:—

WHEAL RIG'EM.

On the "Improved" Cost-book System. The directors taking all risk upon themselves, and holding the shareholders free from liability.

Capital £10,000, in 1000 shares of £10 each.—No calls! No liabilities!

DIRECTORS.

Augustus Jolicock, Esq., *Chairman*. | Julius O'Chaffy, Esq.
Donald M'Straw, Esq. | Charles Penniless, Esq.

Solicitor—Tightly Squeezum, Esq.

Bankers—Messrs. Discount, Como, and Company.

Engineer—Septimus Longgear, Esq., C.E.—*Secretary*—Mr. O'Toole.

The valuable property now offered to the public, and known by the name of Wheal Rig'em, is situated in the rich mineral district of Fancy, and adjoins the celebrated mines of Wheal Pay'em and Wheal Fortune. From the annexed reports of Capts. Anyside and Brag, the directors are fully authorised in stating that a more valuable mine was never offered to the public; whilst, taking upon themselves the whole responsibility of receiving and disbursing the cash, which the shareholders (or, perhaps, more properly speaking, the "adventurers") are called upon to subscribe, they (the adventurers) will be free from all liability, and will not be called upon to sign the cost-book, until a dividend is paid to them, &c., &c. As an important feature in this concern, the directors would impress upon the public the fact that, adjoining and taking in the rich lodes of Wheal Pay'em, no cross-courses, or changes of stratification, interfere to make them less productive in Wheal Rig'em, &c. &c.

This prospectus, I think, embraces most of the "improvements." By the Joint-Stock Registration Act, scrip companies (excepting those previously formed) were declared illegal, and only such companies exempted from its operation as were upon "*the principle*" of the Cost-book, as established in Cornwall, and recognised by the Stannary Courts. Understanding but little of legal matters, I shall not discuss the legality (though I much doubt it) of the "contract-note" (scrip) system being added to the cost-book; but proceed briefly to show—

First.—In such a company as I have here described, the adventurers, or "contract-note" holders, *would not* be free from liability, and would have to rely solely upon the honour and good faith of their directors, without being able to control them, by inspecting accounts, vouchers, &c., as is the case under the Cost-book System. The very fact of their attempting, by virtue of their contract notes, to examine into the accounts, or to inquire into the state of their property—a very laudable act on the part of shareholders—renders them liable for debts.

Secondly.—That, supposing the original directors to be everything they ought to be, the concern might eventually fall into the hands of others, not so scrupulous; and who is to guarantee that the directors will properly expend the funds?

And, thirdly.—Considering the legitimate Cost-book Principle combines the greatest simplicity with the greatest safety to the shareholder, changes which admit even the *possibility* of abuses are not "improvements," but *deceptive innovations*.—ARGUS: *London, Jan.* 15.

REMARKS ON SAFETY FUSE.

SIR,—Long notices continue to appear in your columns on safety fuse, which seem to be nothing more than rivalship between two contending parties; and, as it is very essential to have good safety fuse for mines, I think it would be doing miners and the public justice to support both parties, and keep them in the field to compete with each other, to insure a good article. Messrs. Brunton and Co. are unknown to me, but I know the other party; and when they brought out their fuse, I found it was a great improvement on the "rush," "straw," and "tinspill," then used in mines. I took a deal of trouble to introduce it in the slate quarries in the north of Cornwall, and it has there superseded everything for conducting fire to the charges. I found a great many of the charges did not explode; but failures were not to the extent they were before it was brought into use. I have used fuse from each party, and found no difference in it; nor had any complaint from the men as to one parties' being superior to the other. Your correspondent, last week, appears to have taken some trouble to go into calculation to show the great loss sustained by mine adventurers from using bad fuse, in which he failed to prove a single cause of a fuse missing fire. Every practical miner must know it to be a very difficult matter even for the men who charge the hole to prove it misfired from the fuse being badly manufactured. I would ask your correspondent, if I put a charge of powder in the sea, and then put the fuse in and fired it, whether he expects the powder to explode? All miners are aware that many of their holes have a strong influx of water, which baffles all their skill to stop back; and many times he knows more than half the powder must be destroyed before the fire reaches it. I have charged holes when the shooting nail was used; and, on drawing it out, the water has come up through the hole. What fuse would fire powder in such a case? A great quantity of fuse is also cut in tamping the hole, which will prevent it from igniting the charge; and the fuse is often left lying about in the levels, and injured by cutting and water. I should set down near all the charges shown by your correspondent to be nothing more than what miners term wet holes, or cut fuse; it is too glaring to be bad fuse. The idea of mine agents having an interest with the manufacturers of fuse is quite ridiculous, as the parties are not known to a quarter of them. How long would a mine agent keep his situation if he trucked with the manufacturers for bad goods? With regard to a mine director calling on his agent as to their monthly quantity of ore being short, the reason assigned is a lame excuse, for which the directors should have dismissed him at once, as he could not be fit to manage a mine. My advice to each party would be to decline newspaper wars, and vie with each other in producing the best article, and let the labouring miner test it. No agent will compel them to use bad fuse; it is like fighting against public opinion. I think the thanks of the mining public are due to Messrs. Bickford, Smith, and Davey, for their invention; but they have had their patent right, and must now come fairly into the market. I wish them success, for old acquaintance sake. A quarry is by far the best place to prove fuse, as they have not half so many wet holes, nor is it so likely to be injured.—N. ENNOR: *Treborough, Jan.* 14.

CERRO DEL BOTE MINES.

SIR,—Considerable misapprehension having arisen as to the terms upon which these mines are to be handed over to the new company now forming to work them, I would beg leave to refer, for one moment, to the prospectus, in order to show that really there is no reason to suppose that the 20,000*l.* to be paid to the owners is anything more than the true value of the stores necessary for the purposes of the mines, and that, if not so paid for, and the stores be yielded up, they would have to be re-purchased at a far higher rate. I quote from the prospectus the following passage:—"The owners, in consideration of 20,000*l.*, paid to them in London, will transfer to the present company the mines and the hacienda Cinco Senores, with the whole of the property thereon, as delivered to them by the Bolanos Company." And now, from the same prospectus, we see of what the said stores consist. They are as follows: "Two steam-engines (one erected and at full work on the mine), stores of quicksilver, forage, fuel, timber, iron, steel, tools, cattle, &c., and ores on hand."

Permit me also to say that the old Bolanos proprietors are interested in the result of the undertaking. If the enterprise fails they will receive nothing, and may probably have to make good some deficiency; whereas, if it succeeds, they may eventually have a return of 20s. or 30s. per share. Here, then, is an additional motive to them to subscribe to the new company; while to others the inducement is, that they partake in an adventure of the highest promise on very reasonable terms, which terms being put forward in the prospectus, leave no room for doubt as to the honourable dealing of the promoters. Many gentlemen (amongst them the chairman of the Bolanos Company) have subscribed largely to the Cerro del Bote Company, and holding; as I do, a very favourable opinion of the concern—an opinion which I have before openly expressed—I cannot but think that inquiry into its merits would lead to the speedy completion of the list of shareholders. JOHN PHILLIPS.

London, Jan. 17.

ECONOMY IN MINING.

SIR,—I beg to offer my thanks to your correspondent, Mr. Ennor, for the advice which he gives in his letter of the 9th inst., relative to the best method of dealing with the silver ores of this country; but he has omitted to give us the nature and quality of the parcel of ore which, upon one occasion, he dressed, or the course he took; but I conclude he must have submitted it to the action of water to obtain the results which he quotes, for I cannot otherwise understand how the refuse should be so very superior to the crop. I am willing, notwithstanding, to admit that it is a subject requiring nice experiments, and most careful management. In our case the ores are principally the arseniates of silver, accompanied by native red oxide and the grey and yellow sulphurets of silver. Occasionally we meet with the latter descriptions very rich, but the arseniates are much more abundant, and are often associated with metallic arsenic, the specific gravity of which is so great, that I find it impossible to separate it from the superior ores by any other means than sublimation; and after making the most minute and careful experiments, I have come to the conclusion that such is the plan we should at present adopt—the more especially that, as the ores may be purchased by smelters whose works are carried on at very considerable distances from this county, the tonnage, and, consequently, the returning charges, would be considerably reduced. But I am by no means certain that the mode of dressing which I have taken to may not be open to the objection, that we shall sustain a loss of metal by the process of calcination, which may counterbalance the increase in the produce, and the saving in the returning charges; therefore, to avoid the risk of a serious sacrifice in this respect, I have selected 4 tons of the ores, which I have divided into three distinct parcels—viz.: the cobbed, the smalls, and the dredged ore. These I have carefully sampled and weighed, and they are now in course of calcining (as, indeed, they would have been some three or four weeks since, but for the difficulty I experienced in obtaining a burning-house for the purpose). Upon the sublimation of the sulphur and arsenic, the parcels will be re-weighed and tested, whereby we shall obtain a correct result and guidance for all our future work; they will then be ready for sale. I do not apprehend that we shall find it necessary to calcine all our ores; on the contrary, some fine specimens of the arseniate, blended with native silver, have been sent up this morning, which will be sufficiently prepared for the market, by being broken under the hammer in its crude state. I am about to forward a stone or two of it to our office, 22, New Bridge-street; and should your correspondent be in the neighbourhood, it would be worth his while, or yours, Mr. Editor, or any other gentleman studying mineralogy, or who might be curious to see such rich productions of our native soil, to call there to look at them; and I have reason to hope that this is only the precursor to valuable quantities of the precious metal; for dealing with which any hint from Mr. Ennor, or any other of your correspondents, would be thankfully received. FRANCIS DANIELL.

Camborne Consols Mines, Jan. 15.

GALVANIZED IRON COMPANY.—In the *Mining Journal* of the 22d December, we reported an action of debt, which had been brought by the company against Mr. Ogier, as holder of 50 shares, for the amount of calls of 2*l.* each, which had been made thereon. The case was again brought before the Court of Queen's Bench, on Monday, when Mr. Crowder, by leave of the learned judge, moved for a rule to show cause why the verdict should not be set aside and a nonsuit entered, or a new trial granted. The action was brought to recover from the defendant a call of 2*l.* upon each of 50 shares which he held in the company, and upon which he had before paid 10*l.*, the full amount of the shares. The company had been registered in 1846, but, from some informalities and irregularities which took place in its proceedings, it was found necessary to apply for an Act of Parliament to enable the company to wind up its affairs and to recover the value of the shares, and pay off the liabilities of the concern. Under this Act of Parliament, the plaintiffs contended that they had power to make the call in question; but the defendant denied this, and contended that, having already paid 10*l.* on each share, he was not bound to pay any further call. The jury, however, found for the plaintiffs, and the defendant, therefore, applied to the court to have the verdict set aside, as there was no power in the Act of Parliament, or clause in the Deed of Settlement, which compelled him to pay more than the full amount of his shares.—Rule granted.

WHEAL GENNYS SILVER AND LEAD MINE, IN THE PARISH OF ST. BUDEAUX.—This mine, which promises, we hear, to be exceedingly productive, commenced working on Wednesday, the 9th inst.—the first turf being turned by Mrs. Gennys, of Whitleigh. After the ceremony was over, a large party proceeded to Whitleigh, where an elegant collation was laid out. We understand that this mine is in the hands of persons of great spirit and experience, who have resolved to push their operations vigorously. A powerful steam-engine has been purchased, and other machinery for effectually working the mine has been procured. Mr. Dymond, of Devonport, has been appointed purser.—*West of England Conservative.*

YSTALYFERA IRON-WORKS.—The plot of ground upon which 11 blast furnaces now stand was 12 years ago overgrown with *bramble bushes*, so thick as to make the place almost inaccessible to man. Where you now hear the rattling thunder-like noise of dozens of trams and barrows, the cracks of haulier boys' whips, the powerful puffs of the blast engines, &c., the place was thus, in winter undisturbed, and in summer the same, save but by a few little birds, the flyings about and *tick ticks*, which indicated to the passers-by that their nests were not far off. The neighbourhood then consisted of only about a dozen straw-thatched old hovels, instead of which there are now, within sight of the works, no less than 130 neatly built workmen's cottages, a third of which have been built during the last four years, chiefly by workmen themselves. This circumstance, considering the low rate of wages and comparative dearth of provisions, does not speak badly of the habits of the working people of the place.—*Cambrian.*

CORNWALL AND DEVON CENTRAL RAILWAY.—We understand that the present moment, when money is so abundant with capitalists, is considered a favourable opportunity for reviving this project, and that some attempt of this nature is now being made. We should rejoice at any *well-founded effort* to extend railway communication from the metropolis and the north, to this far-west; but any *abortive* attempt of the kind would, probably, have the effect of greatly retarding so desirable a consummation. Possibly, this movement may have the effect of stimulating the directors of the Cornwall Railway Company (Plymouth to Falmouth) to resume their undertaking; and it is a question for the serious consideration of the county whether any proceeding that would tend to obstruct the furtherance of the line already commenced should be encouraged. Union is strength. "One and All" may do much, but division is sure to result in failure.—*Penzance Gazette.*

The Compendium of British Mining.

BY J. Y. WATSON, ESQ., F.G.S.

WHEAL TREGORDEN SILVER-LEAD MINE.—In Egloshayle, near Wadebridge; in 256 shares. Tregorden has been worked to a depth of 20 fms by means of a small portable engine, and has returned 5 tons per month of very rich silver-lead ore, averaging 30*l.* per ton. The engine, however, not being able to drain the mine, and work sufficient stamp-heads to dress the ores raised, a much larger one has been purchased, and, when erected, it is calculated more than double the quantity of lead can be returned, and considerable profits realised. The sett is extensive, and, being situate in a new mining district, is an interesting one, whether viewed in the light of a promising speculation, or as one likely to open a field for further experiments in the neighbourhood. The shares are in few hands, and well held.

LELANT CONSOLS TIN MINE—in 256 shares—is in a district where the mines have been remarkably successful, and chiefly worked by local parties. It adjoins the rich mine of Wheal Margaret, by which it is bounded on the east and south. The principal workings have been on a parellel lode, and which, up to the last audit, yielded a small profit. Several of the levels on Wheal Margaret lode, however, being within 60 fathoms of the boundary of Lelant, an engine is in course of erection in order to work this lode, and great hopes are entertained that it may prove as profitable in the one as in the other. The sett is a mile long on the course of the lodes.

HERODSFOOT LEAD MINE.—For general statistics, see *Mining Journal* of Jan. 27, 1849. In 512 shares. The returns from this mine are from 90 to 100 tons per month, yielding a profit of from 150*l.* to 200*l.* per month; whilst operations are in progress which, it is hoped, will increase the returns. The mine is 117 fathoms deep, and the bottom level the richest in the mine. After many ups and downs, the prospects warrant the expectation that the shareholders will, ere long, be amply remunerated for their patience and perseverance.

[*To be continued in next week's Mining Journal.*]

Mining Correspondence.

BRITISH MINES.

ALFRED CONSOLS.—The lode in Field's engine-shaft, sinking under the 60 fm. level, is on the average, for the whole length of the shaft, 6 ft. wide, and will yield from 6 to 8 tons per fm. of copper ore—worth 5*l.* per ton, or from 30*l.* to 40*l.* per fm. The lode in the 60 fm. level, east of the engine-shaft, is about 3½ ft. wide, and the ore course on the south part is 2½ ft., very good, producing from 4 to 5 tons per fm.—worth about 30*l.* per fm. The lode in the 60 fm. level, west of said shaft, is from 1 to 2 ft. wide, yielding 1½ ton per fm.—worth 6*l.*; the lode in this level is improving in appearance very much, being composed of copper and beautiful soft spar. In the 50 fm. level, over this ground, the lode is all hard capels—so the change in the 60 fm. level is greatly in favour of the mine. In the winze sinking under the 50 fm. level, east of the engine-shaft, the lode is 2½ ft. wide, producing some ore of good quality. At our setting, on Saturday last, the engine-shaft was set to sink for the month, at 19*l.* per fm. The 60 fm. level east, to drive, at 75s.; the 60 fm. west, at 65s.; and the winze at 90s. per fm.

BARRISTOWN.—We have cut the lode in the 30 fm. level cross-cut, south of Slob shaft, which looks well; we have commenced to drive west, and rise on it; the lode in each place is producing about 6 cwts. of lead per fm.; we shall commence to sink Slob shaft immediately, to cut it at a deeper level. In the 26 fm. level end the lode is small, at present producing about 5 cwts. of lead per fm.; the back of this level is looking much the same as last reported; the lode in the bottom of the adit level is large, but producing a small quantity of lead,

BEDFORD UNITED.—We continue to drive by the side of the lode in the bottom levels east and west, and, consequently, there is nothing new to report. The lode in the 90 fm. level east is 2 ft. wide, producing good stones of ore; in Crewe's winze, in this level, the lode is 2 ft. wide, producing about 3 tons of ore per fm.; the lode in Bray's winze in this level, east of the cross-course, is 3 ft. wide, and will yield from 7 to 8 tons of good ore per fathom. We do not intend cutting into the lode in the 70 fm. level before the end of the present month.

BLISLAND CONSOLS (TIN AND COPPER).—We are getting on as fast as possible in our deep adit; the ground at present is hard, but I am in hopes we shall shortly have an improvement. On account of the severity of the weather, we have not been able to complete our machinery so as to commence sinking, but I am in hopes, next week, that our pumps will be on the mine, so that we shall lose no further time; the moment our stamps and floors are complete we shall be prepared to bring tin to market, having a good pile of work on surface ready for the stamps.

BODMIN CONSOLS.—The adit south of Hext's shaft is looking well; lode 3 ft. wide, of a very promising character, with a vein of lead 3 in. wide; should this continue it will be worth 10*l.* per fm. We have not taken down the lode since we discovered this vein. The north adit, in Pye's land, is looking well; lode 4 to 5 ft. wide, of beautiful appearance, producing good stones of lead—altogether of such good indications as to warrant a first-rate mine at no great depth. The fact is, I have not seen a more promising lode in all my experience of 30 years. Two other lodes are discovered in this sett—one copper and the other lead.

CALLINGTON.—The ground in the 125 fathom level cross-cut continues rather hard for driving. The lode in the 112 fm. level north is producing silver-lead ores, opening tribute ground; the 112 fm. level south will produce 3 cwts. of silver-lead ore per fm. The 90 fm. level south is opening moderate tribute ground. The diagonal shaft, sinking below the 80 fm. level, is now down 3 ft. below the back of the 90 fathom level—ground moderate for sinking. In the 70 fm. level, east on Kelly Bray lode, there has been no lode taken down since last reported. In the 112 fathom level north, at the south mine, we expect to cut the lode in a few days, judging from the ground driven through the cross-course in the level above. Our tribute pitches continue to look much the same as for some time past; but owing to the severe frost, together with deep snow, there can be little done in the dressing department.

CARTHEW CONSOLS.—At the upper mine, with the exception of a good improved state of the lode in the 48 fm. level south, I find no particular change this week. The lode in the 65 fm. level continues to yield good work, which we are stripping down from the engine-shaft to the present end. At the lower mine, I cannot report of any alteration in either lode or ground.—*Jan.* 12.—At the upper mine, in the 65 north we have cleared to the very end, in which is found a lode about 3 ft. wide, of good saving work throughout; and in the back, behind the end, the lode is also very large and good for some fms., which I have this day set on tribute to four men; in this level south the lode continues as last reported, yielding good work. In clearing the 55 fm. level north (which is now about 5 fms. from shaft), I find there is a very good lode in the back, and, from a run we are now clearing, a large stone of good work in copper came down to-day, as large as a smith's anvil. In the 48 south the lode does not look quite so well as last reported; but in the 28 fm. level south a great improvement was met with yesterday; the lode in this end is larger than heretofore, and a branch of lead, about 4 in. wide, is found in it, besides what is found in the other parts of the lode. The tribute department cannot be reported as having much changed; but, in taking a retrospective view of this mine throughout, she is looking much better than she has at any former period since my knowledge of her. At the lower mine, a much greater plenitude of water than usual is issuing from the lode, which I think may be considered as an indication that we are approaching the upper mine lode—the lode here is very large and promising.

COMBLAWN.—This sett is situate about 1½ miles to the south and west of Callington. Four lodes have been explored, and worked on to some extent; the two southern ones underlay towards each other, and are about 30 fms. apart, and the two northern lodes are about 100 fms from them. The lodes are large, particularly the northern ones, and bear evidence of being much mineralised. A stream runs through the sett, forming a valley, in which the present workings are; in this valley a cross-course exists, containing lead, and from its direction, it is most likely the Old Redmoor, now the Callington Mines, cross-course, which has proved so valuable for argentiferous lead ore, and, of late, cut very rich at Holmbush. The question of the position to place an engine to work these lodes effectually has been partially decided by the present capacious engine-shaft, which is completed to the 30 fm. level on the north lode; had this not been done, I think that in consideration of a valuable cross-course intersecting this sett about 70 fms. east of the intended shaft, and also that it appears to be effected by trapean rocks, greenstone, &c., that it would have been advisable to have sought the cross-course to sink the engine-shaft on as the most easy to sink, the most effectual in its drainage, and giving a commanding position to cross-cut to intersect the other lodes, and make discoveries, particularly as the stratification may be much distorted by the volcanic rocks affecting this portion of the country.

CWM ERFIN.—There has been but little dressing done for the last week, on account of the frost. The pumping wheel has been working, and the water is still out of the mine, otherwise the mine is as last reported.

DAREN.—I have this week been favoured with the sight of an ancient manuscript, which throws great light upon the old workings of Daren Mine; the particulars of this work will not appear, before Mr. Davies publishes his *History of the Cardiganshire Mines*, I suppose some time by the end of this year. I have, however, seen enough of it to convince me that we have great treasures before us in getting down with the works of this old mine, independent of the ore ground that we are opening in Daren, in the easterly side of the hill, and for a great length in one portion of the mine never seen in recent operations upon the mine, immediately prior to our time. In one place the plans, sections, and written descriptions, agree in showing a bottom of excellent ore, in a lode upwards of 3 ft. wide, for more than 50 fms. in length; it does not describe this ore as solid, but as composed of strings varying from 3 to 8 or 9 in. wide; and some places in almost solid courses of ore for 18 in. wide, and I am satisfied, from a comparison of these data with my own experience, that we shall find them substantially correct; the bottoms were 63 fms. under surface, and drained by a series of hand-pumps. This ground is very convenient for the application of machinery, and the level Coed adit, which has been driven into it, will be found of great advantage in the drainage of it. You may rest assured that we shall work surely and safely in this great mine, and we shall succeed in restoring it to a most valuable property; there is also some new light thrown upon other portions of the workings, which I shall find of great value in conducting the practical development of the lodes. The ore ground is still exceedingly good in the copper stopes in the middle adit, and we shall have a good mine in this part of the work, not taking into account the work westward of the Roman encampment, where the greatest resources of the mine lie.

DYFNGWM.—There has been much improvement during the last month in the financial position of these mines. On Delfe lode, the shaft in course of sinking from the 22 to the 32 fm. level is completed within 1 fm.; the lode was crossed in sinking this shaft, and presented three branches underlaying north and west to Tudor's stopes, and produced lead throughout. The richness of Tudor's and Davie's sinks, in the bottom of the 22 fm. level (worth 20*l.* per fm.), leaves no doubt that these lodes will prove even more productive in the 32 fm. level. The above shaft will be continued on the underlay of the lode from the 32 to a 42 fm. level, and so proved to a depth of 100 fms., driving levels at every 10 fms. deep upon the course of the lode. The water-wheel, already provided, will keep the mine dry. In the adit level, 20 fms. in length of sink and rise has been cut, and the ore is still good in the forebreast. The rise from the 22 fm. level, to

meet this run of silver ore in the adit, is progressing most favourably; this ground is already producing ore containing about 35 ozs. of silver to the ton—only 4 fms. more to communicate between the 22 fm. level and the adit. When this is completed, it will admit of the west end in the intermediate, or 16 fm. level, being worked, which is also found to be productive of sink steel ore of an excellent quality. The middle level, driving east on the same lode (the Delife), will soon arrive under Jones's stopes—the end in this level is now worth 15*l.* per fm. There is a very rich bunch of ore gone down from Jones's stopes. The captain has engaged to raise, from the Delife lode alone, 30 tons of ore for the next six months, and 50 tons per month for the following six months, but it is now confidently believed that the recent improvements will greatly increase this quantity. Capt. Hoskings, who has very recently inspected these mines, is of opinion that, as the works on this lode are extended, 100 tons of ore will be brought to grass monthly. The great champion lode in this sett, known as the Esgargaled, is about 40 ft. wide. This lode has been approached by an adit, driven partly in the north side of it; the lode is now being crossed at right angles to the south, in order to prove its exact width: 4 ft. have been cut, proving ore throughout, and worth 15*l.* per fm., with every probability of improvement while this cross-cut is continued; the adit is being driven forward eastward on the lode, and is worth 18*l.* per fm. This lode, from its well-known character in the country, and its present promising appearance, is likely to be more productive than all the other works on the mine collectively. The whole of the new machinery, capable of crushing, stamping, and washing 200 tons of lead monthly, including two powerful water-wheels, are now fixed. After discharging every claim upon the mine to the 31st Dec., 1849, including machinery, pumps, timber, &c., there is a balance in hand of 1200*l.*, independent of the dividend declared, and payable the 30th January. There are about 70 tons of lead on the surface ready for the rollers and stampers, which, with the monthly produce the captain engages to raise from the Delife lode alone, and what must be raised from the more recent discoveries, and from the great champion lode, will now secure regular and handsome dividends to the shareholders.

EAST CROWNDALE.—Our 28 fm. west is not so good as last reported; the 28 east is disordered at present. The tribute pitches behind both these ends are producing fair work; the 28, east of engine-shaft, has been let to drive; the lode is small—ground good for driving. The four pitches in the back of the 17 fm. level are producing fair work, and the men getting wages. We should have sampled at our usual time the quantity of tin promised (8 tons); it is all burnt, but we cannot cleanse it until a change of weather. I may add to this, that had not the weather impeded our dressing, we should have had 12 tons by this, ready to sample for November and December.

EAST WHEAL GEORGE.—Since my last report our winze is down 12 ft., and forming regular and well-defined walls, 3½ ft. wide, looking well, and producing real good work for ore. I cannot say what the lode is worth per fathom, as none of the ore has yet been sold; but this I say, I have 100*l.* worth at surface. I have every reason to believe if our shaft was 10 fathoms deep we should raise thousands of pounds worth of ore. I again say I shall be glad to see you with any or all of the adventurers on the mine. The water is very quick in the winze, but I will endeavour to get as deep as possible. I have levelled the ground for the water-course.

ESGAIR LLEE.—We have an alteration for the better in the deep adit east of the cross-cut, on the north lode; the level, for the last 12 fms. driving, has been very wet over head, but on Thursday last the whole of the water came from the bottom of the end—consequently the back of the level is quite dry, and the ground more easy for driving; the lode is looking promising, and producing some good stones of ore. There is no alteration in the lode in the winze under the 12 fm. level since my last report. The canter lode, in the 12 fm. level east from the surface, is improved since last reported; the lode is 2 ft. wide, and looking very promising, and is now producing some saving work. We have to-day cut the canter lode in the deep adit east from the base of the hill, but as yet we cannot say how wide it is; the lode is looking very promising, and producing some good blue and white lead. During the past week the weather has been very severe, and the engine wheel has been frozen up.

HEIGNSTON DOWN CONSOLS.—The lode in the 20 fm. level, west of Hitchins's shaft, still holds its promising character for copper. The lode in the 35 fm level, east of the cross-cut, is worth 20*l.* per fm. for copper ore; the lode in the winze, sinking below this level, is much as last reported on. There is no alteration in the 45 fm, level east of Bailey's shaft.

HOLMBUSH.—The lode in the 120 fm. level south is 6 ft. wide, and will produce 3 tons of lead per fm.; the lode in the bottom of the level will produce 7 tons per fm. The lode in the stopes in the back of the level will produce 2½ tons of lead per fm. The ground in the 120 fm. level cross-cut south, towards the flapjack lode, is very favourable indeed: I believe it was never more so from the commencement. The lode in the 110 fm. level south is 2 ft. wide, composed of quartz, prian, and stones of lead, opening tribute ground. The flapjack lode, in the 100 fm. level, east of the great cross-course, is 2 ft. wide, producing 2 tons of copper ore per fm.

KINGSETT AND BEDFORD.—I have just returned from this mine, and am happy to state that the new lode that I mentioned is looking well; it is not over large at the point we have cut it, from 10 inches to 1 foot wide—good work; a more promising lode no man ever saw; it is a large flakey lead. I am inclined to believe, by rising a fathom or two, we shall get into a rich lode of lead. I advise to drive to cut the same straight east from Carpenter's shaft; we shall only have from 3 to 4 fms. to drive, where the ground is much softer, and if the lode, when cut, looks so well as at present, I should say, up with two rises, four men in each, when there is not the least doubt the results will be favourable. The new rise is getting much better, and the lode more downright, just as we found it in the old rise—the branches underlaying fast, and the lode nearly perpendicular. The south end is looking much better also; we are daily expecting a course of lead ore.

KIRKCUDBRIGHTSHIRE.—We have at length cut the water of the 40 in the 50 end west, which has drawn the 40 fm. level nearly dry already, in consequence of which the shaft and bottom end men are still prevented from working; however, we have connected both the wheels to-day with the pitwork, and are now forking the water fast. There is a fine lode in the 50 end west, yielding half-a-ton per fathom. We have put the men to raise stone for the new engine, and to bring in a drain for the new shaft, which we shall be able to begin soon.

LEWIS.—In driving the 80 fm. level south from the sump-whim shaft the ground is harder than usual. The lode in the 70, east from tin shaft, is 3 ft. wide, worth 10*l.* per fm.—much improved since my last; the lode in the 70, east from sump-whim shaft, on the south branch, is small and unproductive; the 70, west from copper ore shaft, on the south branch, is worth 5*l.* per fm.; the lode in the 70, east from copper ore shaft, on the south branch, is yielding some good stones of tin. The lode in the 60, east from sump whim shaft, on the south branch, is much disordered by a cross branch; in the 60 east, on Cock's branch, the lode is 10 in. wide, with some good stones of tin; in the same level south the ground continues hard. The 50 east, on the south branch, is opening moderate tribute ground; the lode in the 50 east, on south or new lode, from Oak shaft, is much the same as when last reported; the lode in the 50, east from copper ore shaft, on Cock's branch, is 1 ft. wide, yielding some good work for tin. The 40, east from copper ore shaft, on Cock's branch, is yielding good quality work—driving at 12s. tribute. The 40 west, on Cock's branch, is opening moderate ground. In the 30, south from copper ore shaft, towards Cock's branch, the ground is favourable. The tribute ground, in general, is looking well.

NORTH WHEAL BASSET.—The lode in the 72 fm. level is still very rich, and much improved since our last report, it is now 7 ft. wide, and will produce 12 tons of ore per fm.; we consider the lode at present to be worth 100*l.* per fm. In the back and bottom of this level there is a splendid course of ore, the north and south walls are granite. In the winze sinking under the 62 fm. level the lode is 3½ ft. wide, a good course of ore, and will produce from 6 to 7 tons per fm., equal in quality to the ore in the 72. The lode in the 62 west is 3 ft. wide, producing good stones of ore. The lode in the 52 west is very similar to the 62; but neither of these ends are yet in granite. You will see by the map, that the 52 fm. level is now driven to within 25 fms. of the cross-cut, south of Lyle's shaft, and the extent driven in the other levels, shafts, and winzes, are all filled up in the map to this date. The 82 fm. cross-cut, driving south at Miner's shaft, is 5 fms. south. We expect to cut the lode in this level in driving about 4 or 5 fms. more, which will take a little more than two months to do; the ground is better than it has been, though still hard granite. Lyle's shaft is now 4 fms. under the 62 fm. level, where we intend fixing a plunger-lift; the ground in the shaft is the better for sinking. In the 62 fm. level east, on Lyle's lode, the lode is 2½ ft. wide, spar, mundic, and good stones of ore, but this is not yet in the granite strata, and which may not be until 10 fms. deeper. The lode in the cross-cut south of Lyle's shaft, at the 52 fm. level, is 3 ft. wide, but we are doubtful if this is the main part, as it is carrying itself in a different direction from the 52, driving from Miner's: the lode is composed of mundic, copper, and spar. Perhaps I need not explain to you the reason of our sampling falling off, and the difference in the expenditure for the last three months; the water being in the bottom levels accounts for the former, and the erection of two steam-engines, and other necessary materials to complete the same, will account for the latter. But now, I am happy to inform you, that our engines are working well, the water is all drained, and every part of the mine in full operation, and our prospects, particularly in the 72 fm. level, equal, if not exceeding, any mine in this district; and I can assure you we are looking with great anxiety to cut the lode in the 82 fm. level, where we have every reason to think, from the productiveness of the 72 fm. level, we shall have an abundance of ore.

PLYMOUTH WHEAL YEOLAND.—Our shaft is about 8 fms. under the 20 fm. level, the ground very good for sinking; the lode in the shaft is about 4 ft. big, producing fair work for tin. The end driving east of the 20 fm. level is driven about 23 fms. from our engine-shaft; here the lode is from 5 to 6 ft. wide. The ground in the end is not so easy for driving as it was last month; but the lode is producing more tin. The lode going east is looking well. The end going west is about 17 fms. from shaft; here the ground is very good for driving, but the lode is at present poor. We set the backs of our adits, east and west, on tribute, at 11s. and 12s. in 1*l.* Our shaft will be down to the 32 fm. level in about three weeks from this time; we shall then drive east and west, when I think from appearances we shall do very well.

SOUTH WALES MINES.—The south, or Frongoch, lode, in the deep adit east of the Rhydnet river, is looking more promising than when last reported; there is less mundic with an increase of spar, and a good stone of lead in the back of the end. The lode in the winze under the deep adit is 6 or 7 ft. wide, composed principally of slate, mundic, quartz, clay, and a little lead. The lode in the shallow adit east has not been taken down during the past week.

SOUTH WHEAL TRELAWNY.—We have not done much in driving the cross-cut since last mentioned. We have been engaged dividing and casing down the engine-shaft from the whim-shaft from the 40 to the 50 fm. level, in order for the whim to take the stuff from the 50 fm level. We also met with a misfortune with the engine—two of the joints failed near the boiler, which was a narrow escape of the boiler bursting; however, it is all put right, and in a regular course of working order.

TAMAR SILVER-LEAD.—The engine-shaft is sunk 12 fms. 5 ft. below the 100 fm. level—the ground is rather harder for sinking. In the 100 end the lode is 18 in. wide, 1 ft. of which is good work. In the 175 end the lode is 2 feet wide, composed of capel, mundic, and ore—saving work. In the 160 end the lode is 1 ft. wide, composed of flookan and ores. In the 145 end the lode is 3 ft. wide, composed of capel, can, and ore—work of a coarse quality; in the winze sinking in the bottom of this level the lode is 4 ft. wide, and opening profitable ground. At the north mine, the engine-shaft is sunk 4 fms. under the 80—the ground more favourable for sinking. We have cut the eastern branch in the 80 fm. level; it is about 18 in. wide, producing good stones of ore. In the 70 end the lode is 3½ ft. wide, composed of can, with occasional cubes of ore; in the winze sinking to the south of this end the lode is 18 in. wide, good saving work. Our pitches, I am happy to say, are improved in the last week. We sampled on the 7th inst., computed, 90 tons of rich silver-lead ores, samples of which have been sent to the different purchasers.

TINCROFT.—On Highburrow tin lode, in the 152 fm. level, east of engine-shaft, the lode is 6 ft. wide, worth 35*l.* per fm. In the 142 fm. level, east of Martin's east shaft, the lode is 4 ft. wide, worth 18*l.* per fm.; in the back of this level we have set two pitches at 6s. 8d. in 1*l.* In the 132 fm. level, east of Martin's east shaft, the lode is 3 ft. wide, worth 16*l.* per fm.; in the back of this level, east and west of the winze, we have two pitches working, one at 4s. 6d. in 1*l.*, the other at 6s. 8d. in 1*l.* In the 120 fm. level, west of engine-shaft, no lode has been taken down since last reported. At North Tincroft, in the engine-shaft sinking below the 100 fm. level, the lode is 3 ft. wide, and much improved since last reported, now worth 20*l.* per fathom for copper. In the 100 fm. level east the lode is worth 9*l.* per fm.; in the west end, same level, the lode is 4 ft. wide, worth 12*l.* per fm. for copper. In the 90 fm. level, east of Willoughby's shaft, the lode is 4 ft. wide, worth 14*l.* per fm. for tin and copper; in the 90 fm. level, west of engine-shaft, the lode is 4 ft. wide, worth 20*l.* per fathom for copper; in the 90 fm. level east, on the north branch, the lode is 3 ft. wide, producing good stones of copper ore; in the winze sinking below this level, west of engine-shaft, the lode is 4 ft. wide, worth 16*l.* per fm. for copper; in the back of this level we have two pitches working at 5s. in 1*l.* In the 80 fm. level west the lode is 3 ft. wide, worth 5*l.* per fathom for copper. On Chapple's lode, in the 110 fm. level, driving east of Cook's Kitchen, the lode is 4 ft. wide, worth 5*l.* per fm. for tin. In the 100 fm. level, east of Downright shaft, the lode is 3 ft. wide, worth 6*l.* per fm. for tin and copper; in the west end, same level, no lode has been taken down since last reported. In the 90 fm. level west the lode is 4 ft. wide, worth 8*l.* per fathom for tin and copper; in the back of this level we have set a pitch at 3s. 6d. in 1*l.* In the winze sinking below the 70 fm. level the lode is 5 ft. wide, worth 12*l.* per fm. for copper. At Palmer's shaft, sinking below the 90 fm. level, on East Pool lode, the lode is 3 ft. wide, with spots of ore. In the 90 fm. level west the lode is 4 ft. wide, worth 7*l.* per fathom for tin and copper. In the 70 fm. level west the lode is 2 ft. wide, worth 6*l.* per fathom for copper. In the 24 fm. level, west of Stainsby's, the lode is 2 ft. wide, worth 6*l.* per fathom for copper; in the 24 fm. level, west of Stainsby's, the lode is 1 ft. wide, but poor; in the winze sinking below this level the lode is 2 ft. wide, worth 20*l.* per fathom for copper. At Wheal Providence, in the engine-shaft sinking below the 33 fm. level, the lode is 2 ft. wide, with spots of ore.

TREGORDEN.—Our 20 fm. level is now about 3 fms. from Willcock's shaft, where we have the lode 3 ft. wide, composed of spar, capel, and white iron, with lead all through it, which I consider is worth at least 4*l.* per fm. I would also state, that since my last report to you, we have an improvement in the lode in the 12 fm. level, which is now within 6 ft. of the north shaft, where the lode is 18 inches wide, with good stones of lead through it, which, I think, is worth at least 3*l.* 10s. per fm. We have driven through a very regular lode all the way from Willcock's shaft to the present end, which is 35 fms., but there is more lead in it now than there has been for several fathoms, and stil in the gossan. I would observe, that our new engine-shaft is down 20 feet from surface.

TRELAWNY.—In the 82 end, north of Phillips's shaft, the lode is 3 feet wide, and worth 8*l.* per fm.; in the 82, south of ditto, the lode is 2½ ft. wide, and worth 4*l.* per fm. In the 72, north of ditto, the lode is 2½ ft. wide, and worth 8*l.* per fm. In the 62, north of ditto, the lode is 4 ft. wide, and worth 11*l.* per fm. Trelawny shaft is sunk 2½ fms. below the 82 fm. level—still favourable ground. The cross-cut at the 82, towards the lode, is driven 8 fms., and we expect to cut the lode in a few days. In the 72, at North Trelawny shaft, the lode is 4 ft. wide, and worth 8*l.* per fm.; in the 72, south of ditto, the lode is 3 ft. wide, and worth 8*l.* per fm. At the north mine, in the 55 end north of Trehane, we have cut a little more water, but no alteration in the lode. In the 40, north of Smith's shaft, we are still cross-cutting for the lode. In the winze sinking in the bottom of the 30, north of Smith's (which is 16 fms. north of the 40 end), the lode is of a very promising character, and worth 6*l.* per fm. The stopes are producing much as usual.

TRELEIGH CONSOLS.—In the 100 fm. level, west of Garden's, the lode is 3 ft. wide, with stones of ore. In the 90, west of ditto, the lode is 2 ft. wide, with good stones of ore. In the 80, west of the cross-cut, on the north part, the lode is 2½ ft. wide, and worth 8*l* per fm.; in the 80, west of ditto, on the south part, the lode is 2 ft. wide—poor. In the 70, west of Garden's, the lode is 2 ft. wide, worth 4*l.* per fm., and expect an improvement. Wheal Parent engine-shaft, below the 40, sinking in the country. In the 40, east of ditto, the lode is 2½ ft. wide, with good stones of ore, and is looking more kindly; the 40 cross-cut south is driving towards the middle lode. In the 30, east of the engine-shaft, the lode is 20 in. wide, and worth 3*l.* per fathom.

WELLINGTON.—The lode in the 42 fm. level, west of the engine shaft, is from 4 to 5 in. wide, poor, and, at the same level east, is 15 inches wide, still having the appearance of being near a course of copper ore—a pretty looking lode. The lode in the 32 fm. level, east of Parcelly shaft, is 15 inches wide, and near 1 foot of the north part, is all copper ore, worth 16*l.* per fathom. The lode in the 22 fm. level, east of said shaft, is 18 in. wide, producing some fine stones of copper ore. The winze referred to in my last report, sinking under the 32 fathom level, east of the engine-shaft, has not been sinking regular, on account of the ground not being drained by the 42 fm. level; but it appears that we shall be able to resume the sinking to-morrow; the lode here is nearly solid ore, 15 inches wide, worth 40*l.* per fm. The north lode, in the adit end, east of the new shaft, is quite 3 ft. wide, producing occasionally stones of copper ore and tin; in the same level, west of said shaft, the lode is 1 foot wide, and just of the same nature as that of the east end. The shaftmen are preparing to sink the engine-shaft under the 42 fm. level. Our tinstuff sold, on the 14th inst., for 50*l.* 1s.

WEST WHEAL JEWEL.—We have not taken down any lode on Wheal Jewel lode in the past week. The 70 fm. level west, on Wheal Jewel lode, when last taken down, was worth 20*l.* per fm.; in the deep adit west of Tregoning shaft, on Tolcarne tin lode, the lode is looking promising for tin. The 12 fm. level, west of ditto, on the same lode, is producing stones of tin; the stopes in the back of the 12 fm. level, west of Pryor's winze, on the same lode, are worth 15*l.* per fm.; the stopes east of ditto are worth 14*l.* per fm.; the stopes in the bottom of the 12 fm. level, east of Tregoning's shaft, on the same lode, are worth 25*l.* per fm.; the stopes west of Tregoning's winze, on the same lode, are worth 23*l.* per fm. These stopes are working on tribute.

WHEAL PENHALE.—In the 30 fm. level north no lode has been taken down this week. In the cross-cut south the ground is rather hard, which is nothing more than we might reasonably expect, between the two lodes to which I hope soon to have a communication. At the north end in the 20 fm. level we have, since my last, been dessing the lode, and shall not take down any until the latter part of the coming week. In the cross-cut south the ground is hard: from the appearances in stripping down the middle shaft, I am led to think there is yet another portion taken down, having not so great an underlay as the lode usually has throughout the mine, which causes me to suppose there is a "horse" of ground between this and the anticipated unseen portion. Before we drive further west here we shall open a few fathoms on that portion we have in view which looks very promising indeed, and until which we shall not be able to set tributers on it. I have set one new pitch in the bottom of the 20 south to four men. ——*Jan.* 12.—In taking down the lode in the north end 30 fm. level this week, I find it to be from 3 to 4 ft. wide, and is good work throughout in copper and lead, and may be pronounced a good lode; in the cross-cut south we have this week cut a branch about 4 in. wide, which looks very well indeed, producing very good work in lead. In the 20 fm. level north we have also (this week) taken down the lode, and find it greatly improved since my last doing so; in this level south we have done nothing on tutwork since my last, these men having taken the tribute pitches which I reported as having set last week, and whose places I have not deemed advisable to supply for the present. Having been so overpowered with "stuff" in the 10 fm. level from stripping down the shaft, we have not been able to do anything here this week. In taking a general view of the mine, blending tutwork and tribute, she may be considered as looking very well.

WHEAL PROSPER.—On our north lode we have two men working on tribute, at 12s. in 1*l.* On the south lode we have two men and two boys driving on the course of the lode, which is from 5 to 6 ft. wide, carrying tin throughout—all saving work for the stamps; this is not more than 4 fms. from surface, and we have 25 fms. of backs before us for three-quarters of a mile in length, to be taken away without an engine of any sort. I believe there is another good lode before us.

WHEAL VINCENT.—We have taken down the lode in No. 2 winze, and found it equal to expectation—real good work. We have also taken down the lode in No. 3 shaft, and found it equal to last report. Our bottom end, driving west, is much improved; in fact, we have a real good lode, and the tin of an excellent quality.

FOREIGN MINES.

ALTEN MINES.—Estimated produce for November:—

Mines.	Tons of Ore.	Per Cent.	Fine Copper.
Raipas	63	8	5·04
Old Mine	10	6½	3·25
United Mines	18	6	1·08
Michell's	22	7	1·54
Mancur's	1½	6	0·09
Carl Johan's	4	12	0·48
Total	158½		11·48

Mining Report from the 5th November to the 10th December.

Raipas.—Monk's shaft has been cleared of ice, and the sinking has been recommenced—the ground is favourable for excavating. A small squat of rich purple ore has recently been intersected in the limestone, but it does not hold out prospects of permanency. By the middle of February we expect to reach a further depth of 10 fms., immediately after which the 30 fm. levels will be commenced for exploring the mine at this depth. The 20 fm. stope is rather dredgy, but continues to yield remunerative returns. A little improvement is visible in the 20 fm. level easterly, and a small quantity of good ore has been obtained from this working. The southern cross-cut continues in the same limestone stratum, without any visible alteration. The tribute returns for last month were less than expected, but the quality is good, and the work profitable. Twenty tributers are now employed in different parts of the mine, and we anticipate a better result during this setting. In consequence of the severe frost and little snow, we are unable to make any deliveries from this mine, but hope to be able to do so shortly.

United Mines.—The general prospects are not deteriorated, whilst the improvement in the sink still holds good. The lode in the new level continues favourable for driving, with equally encouraging prospects. The tributers have holed to the old 80 fm. workings, which they have commenced clearing. At Woodfall's the tributers continue to collect some small parcels of ore, of a good quality, from the old stulls.

Old Mine.—We have intersected the lode in the old adit level; it is between 3 and 4 ft. in size, and chiefly composed of carbonate of lime, compact and crystallised, with quartz iron pyrites, and a little ore; the ground is also very favourable for driving. The workings on the main lode, north-east of Bergmeister's, progress but slowly, in consequence of the hard nature of the stone; the lode is still poor. The returns from the new sink are satisfactory, and the prospects equally good. The tributers continue to raise some good parcels of ore, of an improved per centage, from other parts of the mine.

Mancur's.—We have commenced sinking on the lode in Mancur's shaft, where the prospects are flattering, and sufficient returns are made to cover the cost.

Michell's.—The stopes on Nellin's lode are now somewhat deteriorated, and the ground continues hard for excavating, which has occasioned a little falling off in the produce. We have commenced sinking on the new lode, towards the south-west, which produces a small quantity of ore; it is very promising, but will not materially add to the returns. The fluctuations to which the workings on this lode are subject have been so frequent, that we cannot consider the present change of prospects as any general deterioration of the lode.

Carl Johan's.—The lode in the sink continues productive, and, although confined, it yields profitable returns. The monthly produce is small, but the quality is very good, and we expect the lode will again expand itself, when we hope to make better returns.

Alten, Dec. 11.—On my way to Raipas these lines, from Capt. Monk, have been delivered to me; my despatches being sealed and delivered at the post-office, I can only attach them to the envelope. I shall visit Raipas to-night, and hope to be able to confirm this good report with next post.—S. H. Thomas.—"According to orders, I forward you, per express, the following few lines relating to the course of ore which we have now in Monk's shaft, which is about 2 ft. big, and containing some of the richest ores known to exist at Raipas. The lode in its present aspect is occupying one-half the space we are sinking on, the south-east side, and running in a direction of north-east and south-west; the other half is replaced by the Jasper, so that whether this will have any effect on the course of ore above described remains yet to be decided. In the other parts of the mine there is nothing new since my report of last week."

COPIAPO MINES.—Mining report for September:—

Copper Mines—Checo.—In presenting you with a report of this mine, I beg to observe, that the general prospects are of a very encouraging character; that although we have had no new discoveries of any great moment, we have had nothing to discourage or cloud our prospects; all the operations in my absence have been carried on steadily and with great order, and the produce varied but little, either as regards quantity or quality. I am pleased to inform you, that the 20 fm. level, east of Harman's shaft, still presents a very cheering appearance; the lode is 2 ft. wide, and the ore of a superior quality—say, 35 per cent. In the 40 fm. level, east of same shaft, we have had a very large lode, from 4 to 5 ft. wide, with two veins of very rich ore, about 5 in. wide each, the one ton the north and the other near the south wall, and the centre, or main, part of it yielding casual stones of ore of fair quality, and I am induced to hope from the strong, rich, and what would appear firmly-rooted branches referred to, and pretty appearance of the centre of the lode, that we are approaching a strong shoot of ore, as the main trunk, if I may so express myself, of which the present branches are mere ramifications. In the 26 fathom level, west of the Victoria shaft, the lode at present is small, not more than 9 in. wide, and the ore of an inferior quality, but we are in hopes that it will soon improve, as in the 12 fm. level, a little to the west of the present end, we had a good lode of ore. In a winze sinking to communicate from the 20 to the 40 fm. level, the lode is large at present, but little ore that will pay for shipping. The stopes in the back of the 40 fm. level are not looking quite so well as when last reported on, but those in the back of the 20 fm. level, to the east of Harman's shaft, are still good, and promise to continue so for some time to come.

San Pedro.—We are only driving one level in this mine—viz.: the 10 fm. west, in which the lode is about 9 in. wide, and the ore good, but the ground is very hard; the stopes in the back of this level continue to yield some good ore, but not in large quantities; still we are more than paying cost, for our force is small—only three pickmen.

La Compania.—I hope before I address you again, to be able to set a few hands to work in this mine, and should the lode continue as at present, both as regards size and quality, we shall soon have to report a good produce.

Produce for September:—Checo, 41 tons; San Pedro, 16 tons = 57 tons.

The *Sion*, with 468 tons of copper ore, sailed from Copiapo, on the 15th October last.

Silver Mines—Al Fin Hallada.—This mine presents the most cheering prospects, and promises to be one of the most important and valuable, not only of Chili, but of the mining world; the strength, size, and beautiful form of the lode, the extensiveness of the various shoots, or branches of ore, the character of the surrounding strata, the various cross and oblique veins falling into and feeding the main artery or lode, and the large quantity of ore that it is producing while yet in a state of infancy, excites the curiosity of hundreds to go to inspect it, and calls forth the admiration of all who have studied but little the beautiful order, and have marked the causes and effects so observable in certain portions of the mineral kingdom. This mine has the preference of every other in this important mineral, in the estimation of all practical men; and when we have had a few months more to develope its resources in depth, to sink shafts, drive levels, and shall have established all the necessary facilities for stoping the intermediate grounds, I believe our returns will be such as to surprise many who have seen and heard a great deal of silver mining in other parts of the world. We have a good lode of silver ore in six different labors, or workings. From labor No. 3 we have driven a 10 fm. level north and south, and have a good lode in each, about 2 ft. wide, a greater part of which is ore of from 150 to 200 marcs per cajon (about 80*l.* per ton) on an average. At No. 4 we have also driven north and south. The lode in the former is 2½ ft. wide, producing some very rich ore, of 600 or 700 marcs per cajon (300*l.* per ton), and the remaining part all ore of not less than 100 marcs. The lode in the south end is not so large, only 1 ft. wide, but all ore that will pay for returning. In No. 5 we have also a good lode, 1½ ft. wide; here we are sinking, and at the bottom are taking out some rich stones of 2000 marcs ore, and all the remainder of very fair quality. At No. 2 we have also come down on silver, and although not rich as yet, promises soon to equal any of the others in size and riches.

San Jose del Carmen.—This mine is also good. The adit level looks beautiful; the lode is 3 feet wide, and about a foot of fair quality—say, 100 marcs per cajon—and we are daily expecting that all the lode will become rich; if so, there is every probability we shall have ore in abundance. In a winze sinking below this level we have also a good lode—say, a foot wide; it is producing some superior ore—say, 300 marcs per cajon—and promises to become richer every day, and, in fact, is improving. To the north of those above named, we are sinking on the vein from the surface, and have some good ore—say, of 150 marcs—and are looking out in full expectation of improvement daily. The other levels are all very promising, and, I believe, I shall soon have to report more in a state of riches.

Carmen Alto.—The lodes in this mine, although as yet comparatively poor, only yielding casual stones of ore, are the most encouraging and inviting that I have beheld. I have an opinion, amounting almost to a certainty, that they will soon become rich, so much so, that I would spend my last shilling to explore them in depth, and, should I ultimately prove unfortunate, could never blame myself for doing so. The lodes are large, and well formed, and all of them contain silver, although only casual stones, and are of a quality as yet that will not pay for returning; but when these form a junction, as they will in about 10 fms. below the present bottom of our shaft, I have no doubt we shall fine a rich bunch of ore.

Mercedetas.—This morning Mr. Telles, one of the owners of this mine, arrived from the Tras Puntas, and brought me a stone from it, containing a great deal of native silver; and he told me that in his presence it was broken out from the bottom or deepest part of the mine; that the lode was larger, but the richer part of it was only 4 inches wide. He also brought me some of the poorer part, which I have had assayed, and it gave 8 marcs per cajon, but the rich stones gave more than 300 marcs; this is very encouraging, indeed, and I hear that barras are in great request, at a very high price; the company have 9½ barras, or 24 shares, in this mine. In another labor, to the north of this, the lode is also exhibiting spots of silver, and I have great hopes that in my next I shall have to make a very cheering and substantial report of this mine—that is, to report a very good produce.

Colorado.—This mine is so nearly allied to the Al Fin Hallada, and the lodes always exhibiting the most encouraging signs of our approaching a bunch, by presenting different changes, and with every one the ore contains silver in a different form and character—sometimes in plumes, or then scales of horn silver; then spots of native silver, and at others a dark metallic-looking stone that conceals the silver from the sight—by assay yields 20 mcs. per cajon. This encourages me to hope that it will change into a richer class of ore, and never more so than now, for we are getting down nearly to the same level as where the riches were discovered in the rich mine referred to above; and in three different points that we are now sinking the lode is of a good size, about 1½ ft. wide, and has a beautiful appearance.

Santa Ana.—We are sinking two levels in this mine—the one north and the other south; in the former, we have a very pretty lode, about 1 ft. wide—4 in. of which is very fair quality ore, for it has improved in the last few days. In the south end the lode is disordered by a cross-course, but I have no doubt will soon be found in a more settled state again. In the winze the lodes are about 9 in. wide—4 in. of which is ore of about 100 mcs. per cajon. We shall bring down about 2 tons of ore from this mine to be amalgamated in a few days.

Transito.—We have only three barreteros working in this mine—two in a shaft, and one driving a level. In the shaft we have had some pretty stones of ore in the last month that contain silver, but not yet of more than 15 to 20 mcs., which will scarcely pay for the heavy price of carriage, and the expenses of amalgamation; but should it become a little better, as we believe it will soon, I hope we shall be able to make it available; in the end, although the lode is large, it does not yet possess that pretty appearance that it does in the shaft.

Purissima.—This is a mine that was worked by some of the people here for about three months, and from which they took out some very rich ore, and because suddenly poor they abandoned it, although it continued its size, and possessed a pretty appearance. I think the probabilities are, that the poverty of the lode will be of but short duration; and as it was free, and could be had for mere asking it, I determined to denounce it, but found that a Mr. Campbell of this place was of the same mind, but he only wanted a quarter part; so we agreed that he should have a quarter and the company three-quarters. It has been ceded to us, and we have put two men to sink on it, the lode has a very pretty appearance indeed. I have great hopes of cutting silver shortly,

Produce for September and October:—Al Fin Hallada Mine, 60 tons; San Jose del Carmen, 30 tons; Santa Anna, 2 tons=92 tons of silver ore.

Gold Mines—Descubridora.—This mine looks well; the shaft that we are sinking, and the level that we are driving, are both producing ore of a quality that will pay well as soon as we can procure carriage at a moderate price, which there is every prospect of our being able to do shortly. We have 15 tons ready for carriage, and could have had a great deal more, had we not reduced our hands to three pickmen, until we can obtain carriage-power to return the ore.

Santo Domingo.—We have a lode of an immense size (6 to 8 ft.), all of which contains gold, and some part of it that will pay for returning in the summer. We have only three or four hands employed here, just to keep the sett secure, and explore in search of richer ore, until we can obtain troops to carry some ore to the amalgamation establishment, to see what result it will give.

Esperanza.—The same remarks will apply to this mine also; we have only three barreteros working here, but the lode looks beautiful, and I think the ore will pay well, if we can get carriage at a reasonable price, or if we were to erect an amalgamation establishment at Prequios.

P.S.—It is impossible for me to state accurately what the produce in silver will be, or what I shall be able to remit, until the ore is all amalgamated, but the result will be good.

LINARES MINES.—*Jan.* 5.—We are getting the floors ready as quickly as possible, but I need not tell you that the preparation of dressing floors requires considerable labour and nicety. We purpose constructing wooden sheds as soon as convenient for cobbing and bucking, but shall not delay dressing for these, and I trust in my next to advise you that we have commenced operations in this department. The men have been employed in clearing the level, and we find the stuff raised to contain lead that will pay for dressing. The other two pitches, set to four men in each, are at the same price as the former. We are also preparing for sinking.

ST. JOHN DEL REY MINES.—*Morro Velho, Oct.* 28.—Gold extracted to date, 16,565 ozts., from 866·52 cubic feet of sand (result of 21 days' stamping) = 19·11 ozts. per cubic foot. Stamps working, 27 days, average 94·82 heads. The supply of stone remains without much alteration in respect to quantity, being ample for the requirements of the stamps, and enabling us to reject daily a few loads of the most inferior stone; but, during the whole month, the quality has been more than usually excellent, telling, as you may perceive, most favourably on the produce.

West Quebra Panella.—This lode, which has been lost to us for some time, is, I believe, found again; but now heaved to the south, instead of, as previously, to the north. At all events, we have now driven into a solid body of lode, which Capt. Treloar thinks must be the lode we have been seeking for.

DEVON AND COURTENAY CONSOLS MINING COMPANY.

At the two-monthly meeting of adventurers, held at the mine, on the 15th inst., the accounts were examined and passed, showing—Balance against the mine last account, 124*l.* 6s. 6d; labour cost November, 173*l.* 0s. 11d.; ditto December, 138*l.* 17s. 4d.=436*l.* 14s. 9d.—By ores sold Nov. 8, 165*l.* 9s. 3d.; ditto December 8, 124*l.* 7s. 11d.; call, 129*l.*—leaving balance against the company, 17*l.* 17s. 7d. It was resolved, that 15 shares belonging to Mr. Charles Ellis, and three to Mr. C. V. Bridgman, be forfeited for non-payment of calls; that, from the peculiar circumstances attending the forfeiture of Mr. J. Edgcumbe's four shares, they be restored to him on payment of calls due. The share register now shows the number to be 502. A call of 5s. per share was made, and the following report was read:—

Jan. 15.—Since our last general meeting, we have divided and cased our engine-shaft from the 40 to the 50 fm. level, put in penthouse, and cut ground for boarers and cistern, and sunk the engine-shaft about 3 fms. In the 40 fm. level we have driven west on the gossan lode 8 fms. 4 ft. 10 in.; till within the last 6 ft. of our driving it was divided into branches, composed of white iron and spots of ore, mixed with killas, but these branches now appear to be united, and forming a lode 2½ ft. wide, producing some good yellow ore, mixed with mundic and fluor spar, some of which has been raised to the surface; this end is now driven to within 12 fms. of the western whim-shaft in the wood, under which (if the present favourable ground continues) it will be extended in about three months, after which a communication will be made with this shaft. In the 50 fm. level we have driven on the gossan lode 7 fms. 3 in., the same being on an average 2 ft. wide, composed of quartz, mundic, and some good ore; the lode now in the end is underlaying south from 3 to 4 ft. in a fathom, and will most probably form a junction with the south lode at a depth of about 10 fms.—at this point we calculate on a great improvement. The

pitches are looking well. We have sold since our last general meeting two parcels of ore, amounting in value to 289*l.* 17s. 1d.; and on Tuesday last, the 8th instant, we sampled 14 tons 9 cwts., computed to be worth 100*l.*

CONSOLS MINES.—At the usual two-monthly meeting of adventurers, held at the mine on Wednesday last, the accounts, as follow, were passed, and a dividend of 5*l.* per share was declared:—By balance from the last account, 1458*l.* 14s. 1d.; ores sold (less dues), 7173*l.* 14s. 1d.=8632*l.* 8s. 2d.—To costs, &c., for November and December, 6751*l.* 19s. 11d.; dividend of 5*l.* per share, 480*l.*=7231*l.* 19s. 11d.: balance in hand, 1400*l.* 8s. 3d.

WHEAL BULLER.—At a meeting of adventurers, which took place on Tuesday last, the accounts were passed, and a dividend of 10*l.* per share was declared, showing—By balance from last account, 181*l.* 19s. 11d.; ores sold (less dues), 2450*l.* 18s. 11d. = 2632*l.* 18s. 10d.—To costs and merchants' bills for October, November, and December, 976*l.* 8s. 7d.; dividend of 10*l.* per share, 1280*l.* = 2250*l.* 8s. 7d.: balance in favour of adventurers, 376*l.* 10s. 3d.

MINING NOTABILIA.

[EXTRACTS FROM OUR CORRESPONDENCE.]

BODMIN CONSOLS.—This mine is progressing very favourably. The water-wheel is nearly ready, and, as soon as in working order, they will commence making for the market.

SOUTH CARADON.—This mine never looked better than at present. They have just sold the last two months' ore, which realised 2070*l.*

WHEAL BRAY.—This sett is being put to work, and you will have the reports in a week or two.

TOLCARNE (in the parish of Camborne).—This mine has commenced operations in a spirited manner. This sett contains South Wheal Frances, Wheal Glanville, and other lodes of equal promise, and is now under the management of Mr. F. PRYOR, who, there is no doubt, will manage the adventure to the satisfaction of the distant as well as local adventurers. Much is expected from Mr. Pryor; and it is, therefore, expected that an example will be set worthy of imitation.

DHUBODE MINES, IRELAND.—We understand, that arrangements are nearly completed for working these mines on a scale commensurate with their value.

CWM ERFIN MINING COMPANY.

The following interesting remarks, being the views of a practical man of long standing, and well experienced in the mineral district in which the mine is situate, may be considered of importance, more particularly from having become a shareholder, the writer, doubtless, has a good opinion of the property:—

Jan. 12.—Having purchased an interest in your mine, and having been so long connected with the practical working of mines in this country, many of which have proved successful, as well as having reported at first upon this property, I take it for granted you will need no further apology for offering you my views as to the most practical and economical method of working the mine. The ore ground now extends to such a distance westward and eastward of the middle engine-shaft that, according to my calculations (and in which Capt. Nicholls and Capt. Absalom Francis coincide), we ought to be able to raise, without exhausting the mine faster than we can sink the engine-shaft, fully 60 tons of ore per month, to obtain which about 100 cubic feet of ground per month, or 60 tons in weight, must be daily raised from the mine, as the depth attained, and must also be reduced to powder for the purpose of washing and making it marketable. Now, in the very height of the wet season, the supply of water used upon all machinery can be erected under the whole of its fall, is not more than sufficient to accomplish this work; and we can, therefore, only calculate, with all the machinery we can put under this water, to work effectually for the months of July, August, September, October, November, and December. January and February are usually frosty, and impede so much that we cannot but half work for March, April, May, and June; and, usually speaking, May and June are so dry that there is not water enough in Cwm Erfin brook to work the wheel to pump the water out of the mine, so that we consider we succeed uncommonly well if we are enabled to work 8 months out of 12, or 2 out of 3. With the present water machinery we cannot dress above 30 tons a month, or half the quantity the mine can produce, while the lifting of the stuff is done in a clumsy and expensive method, and one that cannot be calculated upon with any degree of certainty, as the busy seasons with the farmers often leave the whims without a horse: and if you look at the sketch section, and see the increasing depth of the mine, you will be immediately convinced of the increasing difficulties of working in this respect. Now, I calculate, it will cost as much to increase our field of water machinery (and which will then be only two-thirds of the power wanted)—viz.: 500*l.*—as it will to erect an effectual steam-engine sufficient to draw, crush, and pump, at all seasons, 100 tons of ore per month.

In looking at the arrangement of conducting the mine, it appears to me that we must keep the middle and the western engine-shafts going, with at least three ends from these shafts—say, 30 men on tutwork; we must also keep three stopes going eastward of the middle engine-shaft, and two to the westward—say, five pare of six men, or 30 men more, breaking ore, making together 60 men. Their wages would, on an average, amount to 150*l.*; the dressing cost for 60 tons, 90*l.*; engine, 15*l.*; landing, 6*l.*; wheeling and filling, 30*l.*: carpenters and smiths, 12*l.*; agency, 15*l.*; materials, 60*l.*; sundries, 22*l.* per month, or 400*l.*—while 60 tons of ore, at 12*l.* 10s. a ton (which is not a fair value for the ore), amounts to 750*l.*, taking off 75*l.* for royalty, leaves a net amount of 675*l.*, or a monthly profit of 275*l.* I am arguing now from the present state of the mine, but the eastern 20 end is in good ore, which may probably hold for a good distance. From this statement, which I believe is as perfectly in accordance with truth as it is possible to make it, I leave you to judge whether or not we should club 500*l.*, and erect a steam-engine, or remain spell-bound as we are at present, and shall be for a great portion of our time, without it. You may easily imagine that it would be my motto to curtail expenses, if such are compatible with the well-doing of the mine; but as I conceive such to be not the plan to end in any good, I lay the difficulty clearly open before you for your deliberation, which I hope will end in your giving the mine fair play, which would now enable us to declare dividends, while the present method of working must inevitably entail loss upon us, if my views are based on accurate calculation.

CAMBORNE CONSOLS MINE.—In another column will be found a communication from Mr. F. Daniell, on the preparation of the silver ores found in this mine, in which he states that some stones, rich in arseniate and native silver, had been just forwarded to the offices in London. We made it a point to call and inspect these specimens of the argentiferous wealth of the district, and were much gratified with the evidence they afford of the highly-promising character of the property. The matrix is a very friable killas, interspersed with small crystals of quartz; and the silver does not run through the lode in strings, or veins, but is thickly disseminated throughout the mass in bunches of small fillaments, similar to clusters of curled silk, and which, through a Stanhope lens, have a beautiful appearance. Assays of some ores from the mine have reached 1200 and 1500 ozs. per ton of ore; and although samples from the new discovery have not yet been assayed, it is probable they will exceed 1000 ozs. Sanguine hopes are entertained that this is not the only freak of Nature in this locality, and that yet greater discoveries will be made.

RE-ELECTION OF RAILWAY DIRECTORS.—The annual period is now approaching when one-third of the directors composing railway boards go out of office by rotation, but they are also eligible for re-election. It appears that there is a very general opinion among shareholders who have paid attention to railway matters, that the more prudent course for the proprietors to pursue at the ensuing meetings would be, to propose and elect from their own body new members, properly qualified, and of business habits who are not directors at present in any railway company. Some consider that even a comparative ignorance of railway business would be rather an advantage, because the new members would have to inquire into railway matters at the various boards, and thus, in acquiring the necessary information themselves, may have the beneficial effect of calling the attention of the old directors to matters which might have hitherto escaped their observation, and have remained neglected on that account. It is believed that no harm would arise from this measure, because all the new members, if in error, could be out voted by the old directors on any question that might be brought forward at the various railway boards. By selecting proper men to fill the vacancies alluded to, it is expected that a great advantage would arise to the shareholders, as it would be the first legitimate step towards the re-organisation of railway boards, and the establishment of a new and improved system of railway management. Many of the old directors would gradually disappear from railway boards, and the property of railway shareholders would be as gradually relieved from the infliction of an extravagant management, which might be said, in some instances, to have confiscated the property of shareholders to the extent of several millions. When it is considered that above 400 railway directors annually go through the ceremony of "retiring by rotation," and, as a matter of course, are re-elected by the shareholders, it is not surprising that an erroneous system of railway management, wherever established, should be pursued to the present time.—*Times.*

THE VIADUCT OF THE GREAT NORTHERN RAILWAY AT PETERBOROUGH ACROSS THE RIVER NENE will be a most substantial and elegant structure; the bridge will be of cast-iron, formed by three arches, with a span of 66 feet each, resting on two supports, and sustained by 24 fluted pillars, fixed by atmospheric pressure. At the north end of the bridge, four brick arches will intervene between it and the embankment leading to the station at Sexton Barns; three arches of the same dimensions in the meadow will divide the bridge from the passage over the two railways running at a lower level—viz.: the London and North-Western, and the Syston and Peterborough lines—which will be supported by 12 columns; and between this passage and the embankment to the south will be erected a series of nine arches, similar to those on the north. The Woodstone road will be bridged a little further on; and the greater part of the upper margin being ornamented with tasteful balustrades, the *toute ensemble* will have a striking and beautiful effect viewed from the present wooden structure, leading from the Eastern Counties station to the town, not, perhaps, to be excelled by any railway elevation in the kingdom.—*Lincoln Mercury.*

SOUTH WALES.—The directors of this company have intimated their intention to comply with the recommendation contained in the report of the Committee of Investigation. They state that, under a conviction that the eventual interests of the shareholders will be best promoted by application of the funds immediately at their disposal towards the construction of the portion of the line between Swansea and Chepstow, proposed to be opened in the ensuing spring, the directors think it right to adopt the recommendation of the committee, so far as to postpone the payment of interest upon calls until after the general meeting in February, when the subject can again be discussed, the interest upon calls paid in advance to be discharged in the mean time as usual.

FRANKLIN COXWORTHY'S DISCOVERIES IN NATURAL PHILOSOPHY.—No. XIV.

The facts mentioned in our last notice under this head, so conclusively at variance with previous opinions, very naturally make us sceptical touching other points of information in natural philosophy, which have hitherto been unconditionally received; and although we are indisposed to enter, in this series of articles, upon any lengthened digest of the conclusions arrived at by the accepted leaders in scientific investigation, there is one point so intimately connected with the subject we have been last considering, that we cannot refrain from at least a partial examination of it.

In a small, yet extremely interesting, work on geology, by Lieut. Col. Portlock, R.E., we are told that "By referring to the laws of matter, exhibited in gravitation and attraction, the philosopher has been enabled to weigh the earth he had before measured, and to determine its mean density as about 5·2 (five and two-tenths) times that of distilled water; but the actual mean density of the solid matter of the earth's surface, its rocks and strata, does not exceed 2·9, and evidence has been thus obtained of an increase of density *from the surface to the centre of the earth.*"

Now, in our humble opinion, if we may venture to submit it, we think it would have been no more than reasonable that, before any such gigantic calculations as these were based on "gravitation" and "attraction," some approximate idea should have been attained of what was meant by these terms. Whilst we believe that we shall have no difficulty in showing, in accordance with the principles laid down by the gallant and erudite colonel himself, that the estimate mentioned by him is as far from the truth as any calculation upon assumed premises could possibly be, we demur to the principle; and the authority we have named, adopting the principle, destroys it in application. Let our readers judge for themselves.

With a pair of compasses, make on a sheet of paper four concentric rings or circles, at equal distances from each other, and divide the space between the two outer circles into ten equal parts, and the outer tenth part into 100 equal parts. This done, the outer space of these last 100, of scarcely appreciable measurement, will represent the *ideal* crust of the earth, which, in actual existence, is assumptively estimated to be about 100 miles in thickness. Without quoting the precise words used by Col. Portlock, we may observe that in another part of the volume we are informed that the cooling of the earth has proceeded from the exterior to the interior; and that the granite appears to have been uplifted by comparatively so small a force as not to have been violent, which accords well with its small density, and, therefore, that it was not thrown up from any great depth.

We know, however, that below the surface of this uplifted granite, and generally attached to it, there are metals, such as lead, tin, silver, gold, and platinum, the specific gravity of which last named is about 21·5. Now these metals must have proceeded from no great depth, comparatively speaking, below that of the granite—assuredly *less* than a depth of 100 miles. And, as matter is declared to increase in specific gravity as it approaches the earth's centre, it is self-evident that, deducting two miles on each side of the earth's diameter, the ideal crust, out of the 8000 miles of the entire diameter, the 7996 miles that remain, unascertained by any possible examination or analogy, and subject only to the hypothesis that the density increases in the approximation to the centre, must be composed of matter of infinitely greater density than platinum. And, if it were not so, the platinum, according to the laws of "attraction of gravitation," must have occupied a lower or deeper position, and could not, therefore, have been expelled towards the surface! Such a projection if it could only be attributable to centrifugal force—to repulsion instead of "gravitation of attraction." Our mathematicians must try their hands again before they claim the merit of having weighed the world as well as measured it; and they must pardon us if, having weighed them in their own balance, we have found them wanting.—S.: *Cheltenham Journal.*

THE ELECTRIC LIGHT.

Although little has been said of late respecting this interesting and beautiful problem, it appears attention has been kept alive to the subject, and some further advances and improvements made. Mr. Staite has lately given one or two private exhibitions; and we unhesitatingly say that he has made, since he was last before the public, very considerable progress towards success. The cost of battery power—the necessity for the action being constant and uniform—were difficulties which have hitherto appeared insuperable, and the public have, probably rather hastily, decided, speculatively, that the light could never be established economically. A great portion of these difficulties—at all events, the most serious ones—have, we think, been surmounted; and an actual electric lamp is now produced, giving a white, brilliant, lasting, and steady light; and very little flickering is perceptible. We, last night, attended a private view at Crosby Hall, and were highly gratified with the result. A self-acting regulating magnet is now employed, which is so sensitive to the least variation in the galvanic current, that it instantaneously exerts its controlling action on the whole arrangement, and the light remains perfectly steady. In one lamp, irridium points were used for the conducting electrodes—an arrangement nicely applicable to domestic use, where a moderate light only is required, but one which will remain constant a great length of time. The light from the charcoal points is so intense, that the eye can scarcely endure it, and it is, consequently, inclosed in a white enamelled glass globe, 2 ft. diameter, which has the appearance of a brilliant white sun, diffusing a light equal to day and which totally eclipsed the gas jets burning in the hall. These were, after a short time had elapsed, turned down, when the full brilliancy and power of the electric light was displayed in a most satisfactory manner. Mr. Staite then showed the electric light under water, which at present is more an experiment for curiosity, than as applicable to any really useful purpose, though eventually this may be applied to submarine and other purposes. The decomposition of the light by the prism into the three principal rays, red, yellow, and blue, representing heat, light, and actinism, was beautifully displayed, pencilling them on a sheet of white paper in the most vivid manner, and Mr. Staite said, that there was no other artificial light which could equal the spectrum obtained from that in brilliancy and well-defined outline.

The capabilities of throwing the light to great distances by parabolic reflectors or large convex lens, was then manifested, thus rendering the electric light highly suitable for lighthouses, beacons, signal fires, &c. So far, the experiments were highly satisfactory, and Mr. Staite has evidently made considerable advances since he and his associate in the patent, Mr. Petrie, were last before the public. The continuity of the light is obtained by the action of a piece of soft iron within a coil of covered copper wire, which, while the electrodes are in proper contact, becomes a magnet; but as soon as the combustion separates them, the iron ceases to be a magnet, and falls a short distance closing them again, when it again becomes a magnet. By this alternate motion, the regularity of the light is obtained, and Mr. Staite observed that, as long as power was supplied, and there was no accident to the machinery, the light would continue its full powers for a week, a year, or even 100 years, provided the mechanical arrangements were well and scientifically made.

In reply to a question from one of the audience, the lecturer said himself and partner were prepared to supply the light on terms more economical than the purest gas, or any other artificial light which had yet been in use. Himself and partner had now solved the problem as to the constancy and capability of battery power, sufficiently economical for all commercial purposes; their arrangements were in every way complete, and until they could bring their improvements safely before the public under the Patent Laws, be must request his audience to take his word for what he stated. However sceptical the public with ourselves may hitherto have been as to the probability of this beautiful light ever coming into advantageous operation, we are now convinced a very important improvement has been made, and many of the worst difficulties surmounted. The proceedings gave much pleasing satisfaction to a numerous and highly respectable audience.

The Electric Telegraph Company has now laid down wires by which the transmission of messages from the branch office at Charing-Cross direct to all parts of the kingdom can be effected at any hour during the day or night. This arrangement, from the proximity of the office to the Houses of Parliament, law courts, &c., will increase the rapidity of telegraphic communications, both public and private, from the west end of the metropolis.

SHREWSBURY AND BIRMINGHAM RAILWAY.—It appears the directors have appointed Mr. H. Robertson engineer to the company, in the place of Messrs. Stephenson and Baker, resigned.

MIDLAND.—The directors have addressed a circular to the shareholders, from which it appears that the total sum expended up to the 30th June last was 15,127,458*l.*, and that the outstanding liabilities and probable further expenditure are estimated at 770,240*l.*, making an aggregate of 15,897,698*l.*, which will be 1,864,461*l.* below the total they are authorised to raise under their Parliamentary Acts. The directors avoid entering into conjectures as to future dividends, except in so far as to express a general confidence in the inherent value of the line, and in the beneficial results to be obtained by abandoning the race of competition, and forming mutually advantageous traffic arrangements with other companies.

LATEST CURRENT PRICES OF METALS.

LONDON, JANUARY 18, 1850.

ENGLISH IRON. *a*	*per ton.*		
Bar, bolt, & square, London	£5 15–6 6		
Nail rods	6 15 0		
Hoops	7 15 0		
Sheets (singles)	8 15 0		
Bars, at Cardiff & Newport	5 7 6–5 10		
Refined metal, Wales*	3 5–3 10		
Do. anthracite*	3 15 0		
Pigs in Wales	3 5 0		
Do. do. forge	2 15 0		
Do., No. 1, Clyde ... *net cash*	2 8 0		
Blewitt's Patent Refined Iron for bars, rails, &c., free on board at Newport*	3 15 0		
Do., do., for tin-plates, boiler plates, &c., ditto	4 10 0		
Stirling's Patent } in Glasgow	—		
Toughened Pigs } in Wales	—		
Staffordshire bars, at the works	6 0 0		
Pigs, in Staffordshire	3 5 0		
Rails	5 5–5 7 6		
Chairs	4 0 0		
FOREIGN IRON. *b*			
Swedish	11 10–13 10		
CCND	—		
PSI	—		
Gourieff	—		
Archangel	—		
FOREIGN STEEL. *c*			
Swedish keg	14 15–15 0		
Ditto faggot	15 0–15 15		
ENGLISH COPPER. *d*			
Sheets, sheathing, & bolts, *p. lb.*	0 0 9½		
Tough cake	*per ton* 84 0 0		
Tile	£83 0 0		
Old copper *e*	*per lb.* 8½*d*		
Yellow Metal Sheathing	8*d*		
FOREIGN COPPER. *f*			
Russian	—		
ENGLISH LEAD. *g*			
Pig	*per ton* 16 17 6–17		
Sheet	17 10 0		
Red lead	18 0 0		
White ditto	23 0 0		
Patent shot	19 0 0		
FOREIGN LEAD. *h*			
Spanish, in bond	15 0–15 10		
American ditto	—		
ENGLISH TIN. *i*			
Block	*per cwt.* 4 5 0		
Bar	4 6 0		
Refined	4 11 0		
FOREIGN TIN *k*			
Banca, H. C.	4 6–4 7		
Ditto, for Export only	4 3 0		
Straits	4 5 0		
TIN-PLATES. *l*			
IC Coke	*per box* 1 8 6–1 9		
IC Charcoal	1 12–1 12 6		
IX ditto	1 18 0		
SPELTER. *m*			
Plates, warehoused	*per ton* 17 0–17 5		
Ditto, to arrive	16 15		
ZINC. *n*			
English sheet	*per ton* 21 0 0		
QUICKSILVER *o*	*per lb.* 4s. 0d.		

Terms.—*a*, 6 months, or 2½ per cent. dis.; *b*, ditto; *c*, ditto; *d*, 6 months, or 3 per cent dis.; *e*, 6 months, or 2½ per cent. dis.; *f*, ditto; *g*, ditto; *h*, ditto; *i*, ditto; *k*, net cash; *l*, 6 months, or 3 p. ct. dis.; *m*, net cash; *n*, 3 months, or 1½ p. c. dis.; *o*, ditto, 1½ dis.

* Cold-blast, free on board in Wales.

REMARKS.—We have to notice during the week a steady and improving demand for all kinds of metals, both for the home trade and for exportation.

WELSH BAR-IRON is held firm at 5*l.* 7s. 6d. to 5*l.* 10s. per ton (less 3 per cent. discount for cash), free on board at the port; and it is generally thought the latter price will shortly be realised.

SCOTCH PIG-IRON remains quiet, but without any particular alteration in price.

FOREIGN IRON.—The stock here having been bought up, a considerable advance has taken place, and we must quote the price 13*l.* 10s. per ton.

ENGLISH AND FOREIGN TIN.—The demand continues good; higher rates have been paid, and the market is still looking up.

TIN-PLATES.—We have to notice a further rise of 1s. per box in this article, in consequence of the very limited supply.

SPELTER continues exceedingly firm at quotations.

GLASGOW, JAN. 17.—Towards the end of last week a decline in price took place—some parcels having been forced off at 47s. 6d. The market opened firmer again this week, and still continues so. To-day there have been sales of mixed Nos. at 48s. 6d.—cash, which we quote as the price.

THE LEAD TRADE.

When we last adverted to the prospects of this branch of the trade of the country, we held out great hopes to our mining friends, that there was every probability of considerable improvement in prices, owing to the great reduction of stocks, consequent upon the large export that had continued during the first 10 months of the year to the United States of America, and which, just at the close of the autumn, had been followed by very considerable shipments to the Russian ports. It is with much pleasure, we now acquaint our readers that the anticipations we then expressed have been fully realised. The new year has commenced most favourably, and a new market has opened to us, sales to the extent of nearly 1000 tons having been made for France within the last few days, at an advance of 20s. per ton on the prices ruling in November last. Further enquiries for considerable quantities are, we hear, making for the French market, and should this demand continue, and orders arrive from the United States, for anything approaching to the quantity named by an intelligent correspondent on the other side, as the extent of their requirements of pig lead during the present year, beyond their own resources, it is difficult to foresee to what price this article may be advanced.

THE IRON TRADE.

In our last Journal, we gave a list of furnaces in the South Wales coal field as also those in the South Staffordshire and Worcestershire districts; and we have now, by favour of another correspondent, the pleasure of appending the following list of—

FURNACES IN THE NEWCASTLE DISTRICT.—JANUARY, 1850.

Name of Works.	*Proprietors.*	*In.*	*Out.*	*Total.*
Ridsdale	Ridsdale Iron Co.	1	2	3
Hareshaw	Hareshaw Iron Co.	—	—	3
Wylam	Bell Brothers	1	—	1
Walker	Losh, Wilson, and Bell	2	—	2
Birtley	Birtley Iron Co.	2	1	3
Tyne	Tyne Iron Co.	1	1	2
Derwent and Shotley Bridge	Mounsey and Co.	5	9	14
Witton Park	Bolckow and Vaughan	3	1	4
Weardale and Towlaw	Weardale Iron Co.	2	1	3

[We hope that some of our correspondents will favour us with returns from other districts, as we are anxious to obtain statistical details of the actual position of this important branch of our national manufacture.

In the returns of the South Wales coal-field, in last week's Journal, the number of furnaces in blast at MESSRS. Brewer and Co.'s Coalbrook Vale Works, should have been 5, instead of 2, as then stated.]

New Patents.

SPECIFICATION ENROLLED DURING THE PAST WEEK.

R. BROTHERHOOD, Chippenham, Wilts, railway contractor: For an apparatus or mode of covering trucks and waggons on railways, road waggons, and canal boats, so as effectually to protect goods in the course of public transit from theft or damage, and, at the same, to allow of such trucks and waggons being loaded and unloaded. The patentee describes and claims:—The covering of trucks, waggons, and boats, with a covering supported on longitudinal bearers in combination with radial arms, with or without compound joints. The covering is composed of canvas or some flexible waterproof material, and the longitudinal bearers which extend lengthwise of the carriage are supported in the forked ends of two sets of radial arms which turn at their lower ends upon two common centres, each of which is fixed in the fore and aft end of the waggon, so that the cover may be opened from either side to the other, as required. The cover is kept over the contents of the waggon by four cords attached to the corners, and made fast to linch-pins in the sides of the waggon.

LIST OF PATENTS GRANTED DURING THE PAST WEEK.

S. Newington, of Knole, Frant, Sussex, doctor of medicine, for improvements in sowing, manuring, and cultivating land, and in certain of the implements used therein.

R. A. Burton, of the firm of Bennett, Burton, and Burton, of John's-place, Holland-street, Southwark, engineer, for certain improvements in apparatus connected with sewers, drains, and cesspools, also in suction and delivery pipes, and in connecting such pipes or hose; the apparatus connected with sewers, drains, and cesspools, being applicable to other like purposes.

J. Fayrer, of Surrey-street, Strand, commander in her Majesty's navy, for improvements in steering apparatus.

A. Cooper, of Romsey, Hants, grocer, for improvements in steam and other power engines, and in the application thereof to motive purposes; also in the methods of, and machinery for, arresting or checking the progress of locomotive engines and other carriages.

J. McDonald, of Chester, coachmaker, for certain improvements in the method of applying oil or grease to wheels and axles, and to machinery, and in connecting the springs of wheel carriages with the axles or axle boxes.

J. Glasgow, of Manchester, engineer, for certain improvements in machinery or apparatus for shearing, shaping, punching, and compressing metals.

J. Milwain, of Manchester, joiner, for certain improvements applicable to the closing of doors, windows, and shutters.

A. Barclay, of Kilmarnock, North Britain, engineer, for improvements in smelting of iron and other ores, and in the manufacture or working of iron and other metals, and in certain rotary engines and fans, machinery, or apparatus as connected therewith.

R. Smith, of Clitheroe, Lancaster, manufacturer, for certain improvements in looms for weaving.

H. Cowing, of Stamford-street, Blackfriars, gentleman, for improvements in obtaining motive-power, and in steam and other ploughs, in land carriages, in fire-engines, in raising water, for draining and other agricultural purposes, and in apparatus for evaporating saccharine and other liquors.

J. Nye, of Mill-pond Wharf, Park-road, Old Kent-road, engineer, for improvements in hydraulic machinery; parts of which machinery are applicable to steam-engines and machinery for driving piles.

W. G. H. Taunton, of Liverpool, Lancaster, civil engineer, for certain improvements in obtaining and applying motive-power, and in a means to ascertain the strength of chains and ships' cables.

R. Barber, of Chatham-place, Lock's Fields, Surrey, metal melter, for certain improvements in artificial fuel, and in machinery used for manufacturing the same.

M. U. Sears, of Burton-crescent, St. Pancras, commission agent, for the improved construction of guns and cannons, and manufacture of cartridges for the loading or charging thereof.

DESIGNS FOR ARTICLES OF UTILITY REGISTERED.

J. Parkes, and Son, Birmingham, rule.
Williams and Son, Birmingham, snuff-box.
M. Meyers, Birmingham, penholder.
W. H. Muggleton, Tottenham, type frame.
L. R. Bodmer, Manchester, door spring.
Westhead and Co., Manchester, the respirator cravat or fog-repellant.
Blackburn and Higgin, Bethnal Green-road, fronted vest for gentlemen and ladies.
G. Jacobs, Cockspur-street, fan riding-whip.
G. Cubitt, North Walsham, hand-power for winnowing, threshing, and chaff-cutting machines.—*Mechanics' Magazine.*

Current Prices of Stocks, Shares, & Metals.

STOCK EXCHANGE, Saturday morning Eleven o'clock.

Bank Stock, 7 per Cent., 207½	Belgian, 4½ per Cent., 90
3 per Cent. Reduced Ann., 96½ ⅝ ½	Dutch, 2½ per Cent., 55 ¼
3 per Cent. Consols Ann., 96½ 6 ⅞	Brazilian, 5 per Cent., 88½
3½ per Cent. Ann., 98¾ ⅝ ⅞ ⅝	Chilian, 6 per Cent., —
Long Annuities, 8½	Mexican 5 per Cent., ex Coup., 28¾ 9½
India Stock, 10½ per Cent., 265	Russian, 5 per Cent., 108½ 7½
3 per Cent. Consols for Acc. 96½ ⅝ ½	Spanish, 5 per Cent, 18¾
Excheq. Bills, 1000*l*., 1½d. 58 61 pm.	Ditto 3 per Cent., 36½

Mines.—The market continues firm, and a large amount of business has been transacted; still inquiries have been made for a much greater number of shares, at advanced prices, than sellers could be found to supply. Tin has advanced, and the metal market is generally firm, with an upward tendency. The advices from our local correspondents are highly satisfactory, representing improvements in some of our leading mines, whilst those of minor importance are gradually progressing.

At the Camborne Consols Mine, a considerable improvement in the silver lode has taken place. It consists of a soft friable killas, interspersed with small quartz crystals, throughout which fibrous native silver is thickly disseminated.

At Devon Great Consols there has been a very considerable improvement at Anna Maria, in the 70 fm. level, both east and west.

At South Tamar, the lode in the 70 end south is greatly improved; the lode has not been taken down for some days, and is found to be worth 20 cwts. per fm., the present end continuing the same. The 60 is also improved; 40 tons is expected to be raised this month.

At East Tamar, the 60 end south is much improved; other ends are looking well, and the prospects generally highly encouraging.

Tincroft still continues improving, and large reserves of both tin and copper are being made. The amount of business in these shares this week have been large, and at advanced and advancing prices.

West Buller, South Frances, South Tolgus, West Caradon, Alfred Consols, and South Basset have been in request—the former especially, at an advance.

Cook's Kitchen still continues to improve, and shares are readily sought for at better prices.

South and East Tamar and Bedford United continue in demand.

Holmbush shares are in request, and business done at higher prices. The lead lode in the 120 continues highly productive, being 6 ft. wide, producing 3 tons per fm. in the present end; the bottom is worth 7 tons, and the stopes 2½ tons per fathom.

Cwm Erfin Mine is reported to have very considerably improved, and with sufficient capital and careful management, we have no doubt of this mine becoming permanent and profitable.

North Pool continues to look well; and we learn that she will pay 22*l*. 10s. per 100th share through the present year, if not an increase.

South Basset is represented to maintain the late improvement on Williams's lode. At West Buller, the prospects were never so good as at present; upwards of 40,000*l*. worth of ore has been discovered; and the dividends in future will be bi-monthly, when 15*l*. per share has been promised.

At Wheal Seton, they have a good lode in Tilley's shaft, which will place the mine in her former position, and will continue to pay regular dividends.

Tywarnhayle Mines are considerably improved, and are likely to amply remunerate the spirited adventurers in resuming operations here.

Penzance Consols is represented to have much improved within the last few days, and a local demand has been made for the shares.

The Goginan Lead Mine has declared a dividend of 2500*l*. on the two months' working—being 5*l*. per share. The profits would have admitted a larger amount, but for the expensive operations now being carried on to bring the mine ultimately into a more permanent and profitable position.

At the West Buller account meeting, a dividend of 10*l*. per share was declared from Sept. and Oct. profits. The mine is stated to be looking splendid; and an increase of dividend may be fairly calculated on at the next account.

At the West Providence quarterly meeting, a dividend of 2*l*. per share was declared, leaving a balance of about 100*l*. in hand. We have not received the official statement of accounts; but the above may be considered authentic.

At the Great Consols meeting a dividend of 5*l*. per share was declared, leaving a balance in hand of 1400*l*. 8s. 3d.

At the Wheal Buller meeting, the accounts showed, ores sold, 2450*l*. 18s. 11d. A dividend of 10*l*. per share was declared, leaving balance of 876*l*. 10s. 8d.

At the Devon and Courtenay meeting, the accounts presented, showed—ores sold, 289*l*. 17s. 2d., leaving a balance against the mine of 17*l*. 17s. 7d.

The General Mining Association declared a dividend of 10s. per share for the half-year, and another 10s. may be expected in June next, being the usual amount paid annually (20,000*l*.) for the past four years. The collieries, which are situate in Nova Scotia, are progressing in a satisfactory manner; and, from the present favourable position of the manufacturing districts of the United States, the demand from the surrounding colonies, and the increase of steam navigation, tends to render the company's property of immense value. The numerous difficulties which they have had to encounter are now overcome, and the probability is that the dividends will be permanent and increasing.

Shares in the following mines have changed hands since our last:—Devon Great Consols, South Basset, Tincroft, Treviskey and Barrier, West Buller, Trelawny, West Caradon, Mary Ann, South and East Tamar, Wheal Prosper (Dartmoor), Tregorden, East Buller, West Providence, Wheal May, Trehane, Stray Park, Kirkcudbright, Holmbush, Cwm Erfin, Wellington Mines, Callington, Trethellan, Devon and Courtenay Consols, &c.

In foreign mines the transactions have been chiefly confined to St. John del Rey, Copiapo, United Mexican, &c.

Letters from the Copiapo Mines were received on Friday, the 11th, and we were only prepared with the advice of arrival. In another column we give the report in detail, by which it will be found that the produce for September, from the copper mines of Checo and San Pedro, is 57 tons, the mines being in much the same position as last reported. The silver mines are in a highly productive state, and the prospects most encouraging. The produce for September and October is estimated at 92 tons of silver ore, 90 tons of which were raised from the Al Fin Hallada and San Jose del Carmen mines. The gold mines are represented in a very favourable position; the lodes are large and apparently rich, but the want of labourers, and a local amalgamation establishment, are great obstacles to a large profitable return. The value of the gold and silver ores cannot be accurately given until amalgamated.

The dispatches received by the St. John del Rey directors are of the most gratifying and encouraging character. The letters are to the 28th Oct., and the gold extracted to date amounts to 16,565 oitavas, from 866 cubic feet of sand, being the result of 21 days' stamping. The supply of stone is abundant, with a considerable increase in quality.

Letters have been received from the Linares Mines, which state that the dressing-floors are being constructed with all possible dispatch, and the workings underground were proceeding satisfactorily.

Advices from the Alten Mines to the 11th December have been received; the estimated produce for November is given at 158½ tons of copper ore. The Raipas Mine continues productive; and advice of a rich discovery in Monk's shaft was received after sealing the dispatch. The other mines continue their usual returns, without any important improvements.

It appears, from an advertisement in another column, that the last day for applying for shares in the Cerro del Bote Mining Company is fixed for the 24th inst. A correspondent informs us that many of the old Bolanos proprietors have been deterred from taking shares in the new company, by reason of their chairman's name not appearing on the committee of management, which has led to the supposition that he does not view the new enterprise with favour or confidence; but, that this is so far from being the case, that he, as well as most of the other Bolanos directors, take a very large interest in the new company, and are willing to give their services as directors (gratuitously), if the proprietors see fit to elect them when the time arrives; and that it was purposely, that the shareholders should be left quite free and unfettered in their choice of directors, that these gentlemen were not put forward as promoters in the first instance. He further states that the terms of the contract, which are in many respects more favourable than those under which the Bolanos Company held the mine, have been misunderstood; that the sum of 20,000*l*., to be paid to the owners, is for the necessary stores, cattle, hacienda, and plant upon the mine, and which, if not already thereon, would have to be immediately purchased, and at a cost much beyond the sum named. This property, it appears, the owners received over from the Bolanos Company, in consideration of their agreeing to take upon themselves, and discharge, the liabilities then existing, which were of equal amount.

Hull, Thursday.—A change has come over the share market, and we have to notice an improvement in the value of most good lines. Still the public do not buy to any extent; but, as we have repeatedly stated, they will, after an efficient system of audit, and the closing of capital accounts.

Madrid, Jan. 5.—The quicksilver now in London, belonging to the Spanish Government (33,585 quintals), was put up to public competition, according to previous announcement, and was taken by Messrs. Rothschild's house at the price of $70 per quintal, the upset price of the Government on the last occasion.

The last advices from California mention that quicksilver was being more generally used in collecting the gold-dust, whereby a much more favourable result was obtained. The price of quicksilver had, in consequence, advanced to $4 per lb., but as large supplies had been ordered from Valparaiso, it was expected that this quotation would not be long maintained.

A letter also states that a new spot had been discovered in the River Americana for gold washings, where the precious metal was so abundant, that a man lately arrived from Baltimore had collected in one week $6000 worth.

PRICES OF MINING SHARES.

BRITISH MINES.

Shares.	Company.	Paid.	Price.
1000	Abergwessin	9	6
1024	Alfred Consols	8½	15 20
1024	AshburtonUnited Mines	8½	12
1624	Balleswidden	9	16
128	Balnoon Consols	42½	50
905	Barristown	5½	3 4
3650	Bawden	½	½ ¾
6000	Bealbury	1	1
4000	Bedford	2½	5 5½
1280	Birch Tor & Vitifer	10½	6½ 7
2500	Black Craig	6	10
8000	Blaenavon	50	10
5000	Blisland Consols	1	4½
1024	Bodmin Moor Consols	5	7
100	Botallack	182	30
120	Brewer	5	2½
256	Brimpts Tin	2½	2½
10000	British Iron, New, regis.	12	8
—	Ditto ditto, scrip	10	10
2400	Bryn-Arian	2	6 6½
107	Budnick Consols	52½	9
1000	Callington	22	5
1000	Camborne Consols	7	6
20000	Cameron's Steam Coal	7	1
256	Caradon Mines	22½	10
256	Caradon United	24	5 8
256	Caradon Wh. Hooper	21	4½
000	Carn Brea	15	105
1000	Carthew Consols	1½	7
3114	Charlestown	220	—
500	Combiawn	5½	4½
128	Comfort	45	68
256	Condurrow	20	90
2560	Cook's Kitchen	14	10
1000	Coombe Valley Quarry	5	5
1000	Copper Bottom	1½	6½
900	Court Grange	7	10
212	Craddock Moor	23½	5
128	Creeg Braws	120	30
500	Cubert Mine	12½	—
1000	Cwm Erfin	3½	1½ 2
1000	Daren	2	2 3
7100	Derwent	8½	5
502	Devon&CourtenayCon.	11½	2½
1024	Devon Great Consols	1	190
1000	Dhurode	2	5
182	Dolcoath	30	17
2560	Drake Walls	5½	3
10000	Durham County Coal	45	9
3000	Dyfngwm	10	6
512	East Alvenney	5½	6
2500	East Birch Tor	3	3
1024	East Buller	1	5 5½
112	East Caradon	47	47
2048	East Crowndale	7½	1½
128	East Pool	15	60
9000	East Tamar Consols	½	1¼ 1½
258	East Tolgus	1½	4½
94	East Wheal Crofty	125	65
128	East Wheal Rose	50	590 600
—	EastofScotland Iron Co.	5	1½
123	East Wheal Seton	14	10
1280	Esgair Llee	2	3
248	Exmoor Wh. Eliza	11	10 12
494	Fowey Consols	40	45
1024	Freidd Llwydd Mines	1½	3½
4000	Gen.Mining Co.for Irel.	1½	1½
256	Gonamena	44½	16
128	Goonvrea	4	2
256	Grambler & St. Aubyn	80	6
96	Great Consols	1000	300
512	Gt.Wh.Rough Tor Con.	24½	18 20
6000	Growa Slate Company	5	5
256	Hawkmoor	12½	70
6000	Heignston Down Con.	1½	2
1500	Hennock Silver-Lead	5s6d	5
4500	Hennock Iron & Tin	21s	21s
512	Herodsfoot	16	12½ 15
10000	Hibernian	12½	1½
1000	Holmbush	22	13
1024	Kingsett and Bedford	1½	3½ 4½
787	Kirkcudbrightshire	8½	3½ 3½
2048	Lamherooe Wh. Maria	9	4
252	Lanarth Consols	—	3½
256	Lelant Consols	47	25
160	Levant	—	140
1000	Lewis	17	9½ 10
1000	Llwynmalees	8½	13 15
3600	Llynvi Iron	50	50
253	Lostwithiel Consols	23	10
6000	Marke Valley	10	½ 1
5000	Mendip Hills	3½	3 3½
128	Metha	34	—
20000	Mining Co. of Ireland	7	5
256	New East Crowndale	3½	4½ 5
100	North Pool	45	510
140	North Roskear	5½	150
262	North Wh. Leisure	1½	2
18000	Northern Coal Co.	23	2
128	Par Consols	55½	650
1248	Pengelly Tin	1	1
8000	Pennant & Craigwen	2½	2
1024	Penzance Consols	22s 3d	4
512	Plymouth Wh. Yeoland	6½	6
200	Polsaith Consols	5½	4½
2500	Rhoswiddol&Bacheiddon	10	10
10000	Rhymney Iron	50	13
10000	Ditto New	7	6½
1000	Rosewall Hill	1	5
256	Rosewarva Mines	—	12
2048	Rumaford Coombe Tin	¾	5

BRITISH MINES—*continued.*

Shares.	Company.	Paid.	Price.
9000	South Tamar	½	2½ 3
128	South Caradon	5	200
1100	South Dolcoath	5	½ 1
256	Sth Friendsh. Wh.Ann	30	28 30
256	South Molton	7	12 13
256	South Tolgus	16	102 115
256	South Trelawny	28½	5
2000	South Wales Mining Co.	1	1
128	South Wheal Basset	20½	450
124	South Wh. Frances	160	305
256	South Wh. Josiah	2	3½ 4
1000	South Wh. Maria	2½	1½
10000	Southern&Western,Irish	2½	4
280	Spearne Moor	30	40
94	St. Ives Consols	—	80
128	St. Michael Penkivel	5	10½
999	St. Minver Consols	1	6
1000	Stray Park	43	20 21½
9600	Tamar Consols	3	7½ 8
10240	Tavystock Consols	½	½ ¾
1024	Tavy Consols	6½	1½
6000	Tincroft	7	12½ 13
58	Tokenbury	170	10
240	Tolcarne	8	15
256	Tregorden	3½	6 8
256	Trehane	1½	30 31
5000	Treleigh Consols	6	3½ ¾
2000	Treance	3	—
96	Tresavean	10	95
120	Trethellan	5	21
120	Treviskey and Barrier	130	145 160
512	Trehevy Copper	1	1
1000	Tylwyd	2	2½
200	United Mines	50	160
256	Wellington Mines	25	15
128	West Buller	10	450
256	West Caradon	20	97½ 100
512	West Fowey Consols	40	12
—	West Par Consols	2½	—
2500	West Polgooth	5	5
512	West Providence	9	15 16
200	West Seton	45	185 190
120	West Trethellan	5	5
512	West Wheal Frances	1½	3½
256	West Wh. Friendship	9	8
3845	West Wheal Jewel	12	2½ 2½ 3
256	West Wheal Tolgus	80	5
256	West Wheal Treasury	27½	15
1024	Whiddon Mines	4½	2
5200	Wicklow Copper	5	12
107	Wheal Adams	130	150
1000	Wheal Agar	—	6
256	Wheal Albert	10	1
240	Wheal Anderton	28	15 20
128	Wheal Ann	—	50½
512	Wheal Anna Maria	7	4
120	Wheal Bal	5½	10
256	Wheal Benny	14½	2
1024	Wheal Bray	11½	10
232½	Wheal Calstock	9	20 25
182	Wheal Elizabeth	9	14
256	Wheal Fortescue	15	12 13
100	Wheal Friendly	70	66½
388	Wheal Franco	27	11 12
100	Wheal Henry	—	18
1024	Wheal Lawrence	2½	2½
112	Wheal Margaret	79	240
512	Wheal Mary Ann	5	32 33
5000	Wheal May	½	½ ¾
360	Wheal Oak	25½	5
3000	Wheal Penhale	1½	6
210	Wheal Prospect	4	7
120	Wheal Reeth	41	150
128	Wheal Rose	60	3
198	Wheal Seton	107	200
180	Wheal Sisters	35½	5
512	Wheal Sophia	5½	5
128	Wheal Spearne	10	60
128	Wheal St. Ann	30	35
550	Wheal Trescoll	10½	19 20
260	Wheal Trelawny	7½	78
256	Wh.Tremaine(St.Ervan)	9½	2½
1024	Wheal Tremayne	9½	6½ 7
267	Wheal Tryphena	140	30
1000	Wheal Vincent	2½	8
128	Wheal Vlow (Perranz.)	1½	1½
184	Wheal Vyvyan	—	60

FOREIGN MINES.

Shares.	Company.	Paid.	Price.
5000	Alten Mining Company	14½	2½ 2¾
15000	Asturian Mining Co.	15	2½
20000	Australian	4	5½
6000	Barossa Range	1½	1½ ¾
3000	Bolanos	150	—
2000	Ditto Scrip	15	—
10000	Brazilian Imperial	23	3 4
12000	Cobre Copper Co.	40	30
10000	Copiapo Mining Co	14	4 3½
20000	General Mining Ass'n.	20	10½
4000	Guadalcanal	5	1½ 1½
2000	Ditto Preferential	2½	2½ 2½
5000	Kinzigthal Mining Ass.	2	1½
5051	Mexican Company	59½	—
20000	Mexican & SouthAmer.	8	1 1½
5000	National Brazilian	30	3½
104000	N. Brit.Australasian	1	¾
7000	Royal Santiago	10	5½
11000	St. John del Rey	15	13½ 14
43174	United Mexican ... Av.	28½	5½
10,000	Worthing (S. A.)	2	2½

**** We should feel greatly obliged by agents, or others interested, furnishing us with such corrections for our Share List as we may not have received through our usual channels of information—our object being, to present as accurate a list of prices as can be obtained—to procure which, we solicit the aid of correspondents in general.*

RAILWAY TRAFFIC RETURNS.

Names of Railways.	Length. 1850	Length. 184[9]	Present actual cost.	Price p.share	Div. 1849	*Traffic Returns.* 1850	*Traffic Returns.* 1849
Aberdeen	57	16	1,000,547	11¾ 12	—	£ 877	£450
Belfast and Ballymena	37¾	37¾	514,968	18½	5*	408	345
Birkenhead, Lancashire, & Chesh.	19	19	1,088,804	37	5†	781	686
Bolton, Blackburn, & West Yorksh.	14	—	786,384	5½	—	419	264
Bristol and Exeter	85½	75½	2,660,490	62	—	3015	—
Caledonian	160	141	5,149.320	11¼ ½	3	5731	3799
Chester and Holyhead	100	84	3,358,217	9½ 10	4	1086	1051
Dublin and Drogheda	35½	35½	778,565	27	—	663	692
Dublin and Kingstown	7¾	7¾	395,915	—	—	476	583
Dundee, Perth, & Aberdeen Junc.	50	47½	544,554	13½	6½	906	847
East Anglian (Lynn to Ely)	91½	67	1,247,446	2½	—	683	680
East Lancashire	75½	24	2,628,519	12	5	2551	1731
Eastern Counties and Norfolk	322	295	12,027,069	7¾	—	13578	12037
Eastern Union	95	50½	1,782,703	4½	—	1607	1175
Edinburgh and Glasgow	57½	52½	2,923,199	26½ 8	6	2492	2777
Edinburgh and Northern	78	34	2,241,276	10½	2	2224	1679
Glasgow, Paisley, and Ayr	104	74	2,574,330	49	3	2367	2260
Glasgow, Paisley, & Greenock	23	23	852,846	12¾	2	838	702
Gt. Northern & East Lincolnshire	143	—	5,138,756	7½ 7	5†	2474	—
Gt. Southern & Western, Ireland	188½	110½	3,552,589	30½	6†	3691	2891
Great Western	230½	206½	11,867,042	64 5	6½	12529	15548
Lancaster and Carlisle	90	70	1,476,102	51	4½	2744	1708
Lancashire and Yorkshire	220	127½	10,063,862	59½	5½	10533	9608
Liverpool, Crosby, & Southport	13	—	84,455	4½	—	64	53
London and North Western	478	428	26,251,635	116½	7	37611	36534
London and Blackwall	5½	4	1,299,675	3½	1-12	546	527
London, Brighton, & South Coast	170	162½	6,502,600	82 83	2½	6670	6193
London and South-Western	221	194	7,874,259	67½ 7	5½	7566	7425
Londonderry and Enniskillen	14½	14½	185,739	16	—	128	109
Manchester, Sheffield, & Lincolnsh.	157½	94½	6,598,260	18	5	4096	2493
Midland Company	483	423½	15,133,779	44 5	5½†	18355	18803
Midland Great Western (Irish)	50	36½	725,332	25	4†	930	751
Monklands	36	—	486,245	—	6	734	917
North British	135	83	3,649,055	11	4½	2925	2005
Scottish Central	45½	—	1,364,228	14¾ 15	7	1055	840
Shrewsbury and Chester	48	23	969,618	13	5	1232	1258
Shropshire Union	30	—	—	3 3½	—	341	—
South Devon	57¾	29	1,909,232	5	5	1402	1115
South-Eastern	189½	165½	8,666,007	20 20½	5½	8703	6475
Taff Vale	38	40	879,110	—	7½	1660	1712
Ulster	36	36	723,829	45¾	—	746	724
Waterford and Limerick	25	—	512,894	—	—	—	256
West Cornwall	13	—	—	—	—	297	301
Whitehaven Junction	12	12	150,879	9½	3	189	166
York, Newcastle, & Berwick	290½	242½	6,827,849	17½ 16¾	7	9211	11404
York and North Midland	260	234	4,983,618	18½ 18½	7	5533	6320

THAMES TUNNEL COMPANY

The number of passengers who passed through the Tunnel in the week ending Jan. 12 was—No. of passengers, 20,027.—Amount of money, £83 8s. 11d.

JOINT-STOCK BANKS.

Shares.	*Companies.*	*Paid.*	*Div. p. cent.*	*Price.*
22,500	Australasia	£40	£3	£22
20,000	British North American	50	6	40½
20,000	Colonial	25	5	8
20,000	Commercial of London	20	6	22 22½
60,000	London Joint-Stock	10	6	17½
40,000	London and Westminster	20	6	25½
10,000	National Provincial of England	35	5	37
20,000	National of Ireland	22½	6	18½
20,000	Provincial of Ireland	25	8	45
10,000	South Australia	22½	—	17¾ 18
20,000	Union of Australia	25	6	30
60,000	Union of London	10	6	12¾

SILVER-LEAD ORE

Sold on the 16th of January.

Mine.	*Tons.*	*Price per Ton.*	*Purchaser.*
Holmbush (computed)	35	£16 1 0	Walker, Parker, & Co.

COPPER ORES.

Sampled Jan. 2, and Sold at the Royal Hotel, Truro, Jan. 17.

Mines.	*Tons.*	*Price.*	*Mines.*	*Tons.*	*Price.*
Devon Gt. Cons. Wh. Josiah	100	£8 4 6	West Caradon	61	£7 16 0
ditto	88	9 12 6	ditto	52	8 12 6
ditto	86	7 2 0	ditto	50	8 10 6
ditto	66	7 15 0	ditto	38	4 11 6
Wh. Fanny	119	7 0 6	Fowey Consols	112	8 3 6
ditto	96	5 15 6	ditto	89	6 18 6
ditto	95	6 9 0	ditto	54	5 2 6
ditto	84	5 1 6	Wh. Friendship	100	9 6 6
ditto	81	6 15 0	ditto	78	8 19 6
ditto	79	6 0 6	Poldice	51	4 17 6
Wh. Maria	70	12 14 0	ditto	50	4 4 6
ditto	56	9 8 6	ditto	38	4 15 6
ditto	55	7 10 6	Bedford United	117	9 11 6
Wh. Anna Maria	103	7 0 6	Wh. Jewel	35	1 15 6
ditto	44	4 12 0	Wh. Maiden	24	6 7 6
West Caradon	93	8 12 6	Tamar Slag	12	4 5 0
ditto	67	11 4 6			

TOTAL PRODUCE.

Devon Gt. Cons. Wh. Josiah, Wh. Maria, Wh. Fanny, Wh. Anna Maria	1222	£9000 8 0	Wh. Friendship	178	£1632 11 0
			Poldice	139	641 6 6
			Bedford United	117	1120 5 6
			Wh. Jewel	35	62 2 6
			Wh. Maiden	24	153 0 0
West Caradon	361	3078 12 0	Tamar Slag	12	51 0 0
Fowey Consols	255	1808 13 6			

Average Standard .... £102 2 0 | Average Produce 10

Average Price per ton £7 9 6

Quantity of Ore .... 2343 tons | Quantity of Fine Copper, 234 tons 19 cwts.

Amount of Money £17,547 19 0

LAST SALE.—Average Standard ...... £106 7 0.—Average Produce 8½

Standard of corresponding sale last month, 101*l*. 18s.—Produce, 9.

COMPANIES BY WHOM THE ORES WERE PURCHASED.

	Tons.	Amount.
Mines Royal	368	£3068 17 6
Vivian and Sons	303	2543 12 1
Freeman and Co.	297	2538 0 7
Grenfell and Sons	113	990 9 0
Sims, Willyams, and Co.	496	3300 3 3
Williams, Foster, and Co	526	3822 6 9
Schneider and Co.	240	1284 9 10
Total tons	2343	£17,547 19 0

Copper ores for sale on Thursday next, at the Royal Hotel, Truro.—Mines and Parcels.—Consols Mines 641—United Mines 605—Treviskey 438—Tresavean 387—Par Consols 259—South Caradon 250—Trethellan 226—South Tolgus 218—Perran St. George 218—Wheal Comfort 120—Treleigh Consols 76—Penpoll regulus 50—Wheal Ellen 41—East Wheal Rose 27—Wheal Jewel 10—Wheal Unity Wood 6—Pembroke 1.—Total, 3573 tons.

Copper ores for sale on Thursday week, at Andrew' Hotel, Redruth.—Mines and Parcels.—North Pool 530—Wheal Seton 517—Camborne Vean 502—East Wheal Crofty 500—Tincroft 460 South Wheal Basset 380—Fowey Consols 240—Condurrow 208—Dolcoath 196—East Pool 153—South Wheal Frances 141—North Roskear 96—Grambler and St. Aubyn 40—Wheal Mary Consols 33—Copper Bottom 26—Creeg Braws 18.—4040 tons.

COPPER ORES

Sampled Dec. 26, and Sold at Swansea, Jan. 17, 1850.

Mines.	Tons.	Prod.	Price.	Mines.	Tons.	Prod.	Price.
Cobre	96	15¾	£12 18 6	Cobre	76	15½	£13 2 0
ditto	92	15½	13 6 6	ditto	70	22¾	18 18 6
ditto	81	16¾	13 2 6	ditto	43	16½	13 10 0
ditto	64	23½	19 2 0	ditto	25	18	15 0 6
ditto	62	23½	18 8 6	Guildford Slag	103	4½	3 5 0
ditto	55	23½	18 17 0	ditto	17	5½	3 14 0
ditto	90	15½	12 8 6	Waterloo Slag	27	1½	0 8 0
ditto	82	14¾	11 19 6	ditto	25	3½	2 5 0
ditto	74	22½	17 11 0	ditto	2	2½	1 5 0
ditto	65	15¾	12 6 6	Burra Burra	40	34½	29 15 0
ditto	60	23½	18 17 6	ditto	6	44½	38 11 0
ditto	52	22¾	18 15 6	Vine Slag	13	8¾	2 2 0
ditto	80	15½	13 1 0	ditto	8	4½	3 3 0
ditto	77	24	19 9 6	London Slag	22	5½	3 4 6

TOTAL PRODUCE.

Cobre	1261	£19066 7 0	Burra Burra	46	£1421 6 0
Guildford Slag	120	397 13 0	Vine Slag	21	52 10 0
Waterloo Slag	54	69 11 0	London Slag	22	70 19 0

COMPANIES BY WHOM THE ORES WERE PURCHASED.

	Tons.	Amount.
English Copper Company	231	£4117 9 9
Freeman and Co.	48	620 8 0
Grenfell and Sons	246	3108 3 0
Sims, Willyams, and Co.	196	3573 11 0
Vivian and Sons	278	1978 7 6
Williams, Foster, and Co.	286	4090 11 0
Mines Royal	70	1324 15 0
British and Foreign Copper Company	39	749 15 9
Mason and Elkington	113	1515 5 0
Total tons	1507	£21,078 6 0

Copper ores for sale Jan. 31.—Knockmahon 103, ditto 92, ditto 86, ditto 78, ditto 72, ditto 66, ditto 53, ditto 47, ditto 23.—Berehaven 122, ditto 119, ditto 100, ditto 98.—Ballymurtagh 58, ditto 36.—Total, 1153 tons.

MINING APPOINTMENTS FOR JANUARY.

19. Pay day at Fowey Consols, Great Consols, United, Comfort, Agar, Wheal Seton, and Treviskey.
21. Par Consols sampling at Par. Treviskey account.
22. East Crofty and South Roskear account on the mines.
23. Carn Brea and other mines sampling.
24. Ticketing at Pearce's Hotel, Truro. Consols, United, and other mines.
25. North Pool mine pay, and East Crofty setting.
26. Pay at Fowey Consols, West Seton, North Roskear, South Frances, Condurrow, Tresavean, Trethellan, and Grambler.
29. Tresavean account on the mine.
30. No copper ore sampling this week.
31. Ticketing at Andrew's Hotel, Redruth. North Pool, Wheal Seton, and other mines.

ACCIDENTS.

The boilers of the engines at Hobson's Colliery, near Amfield-plain, exploded a few days ago, but without any further damage than the total destruction of the boilers and part of the machinery. We regret to add, that the occurrence was by no means accidental, but was caused by a body of 15 men, who made their appearance disguised, and having ordered the engineman off the premises, placed, it is supposed, a barrel of gunpowder upon a quantity of damp coals which they previously threw upon the fires. The colliery is the property of the Marley-hill Coal Company, between whom and the men in their employ considerable disagreement has existed for some time past.

Mosbro'.—James Bayliss, coal miner, aged sixteen, was killed in Mr. Luke Worrall's coal pits. It appeared in evidence that the deceased and another youth, about the same age, went into the pit about half past four o'clock that morning, and commenced working before the other men arrived. After working some time, his companion told him there was danger, but the deceased took no heed, and shortly after a mass of coals, weighing upwards of a ton and half, fell upon him, crushing his legs in a most shocking manner. He was released as soon as possible, and medical aid procured without delay, but the hæmorhage was so great that he died in a few hours after being got home.—A verdict of "Accidental Death" was returned.—*Sheffield Times.*

Wolverhampton.—S. Wheelwright was accidentally killed by a fall of coal and rubbish while at his work "holing" down a pit in Farthing's-lane Colliery, under Messrs. W. and M. Grazebrook. The deceased's father was the butty of the pit, which was stated by witnesses at the inquest to be very carefully worked.—J. Griffin has died from the effects of injuries he received by a similar occurrence, while loading a skip over a pit belonging to the New British Iron Company, at Bumblehole.—*Wolverhampton Chronicle.*

NOTICES TO CORRESPONDENTS—(*Continued*).

British Mining Interest—Testimonial to Mr. Sharp.—The following subscriptions have been received since our last:—Capt. Davis, R.M., Fowey, 1*l*.; Wm. West, Esq., C.E., St. Blazey, 1*l*.; Capt. Puckey, Fowey Consols, 1*l*.

*** We are again compelled to postpone Dr. Merry's paper, on Experiments on the Extraction of Gold and Silver from their Ores by the Wet Way; also the communications of Mr. T. Craddock and Mr. G. Shepherd.

NOTICES TO CORRESPONDENTS.

*** We must impress upon our correspondents, the necessity of invariably furnishing us with their names and addresses—not that their communications should, consequently, be noticed, but as an earnest to us of their good faith.

"A Victim" (Holborn).—The publication of the communication would subject us to an action for libel. Apply to a solicitor, who will advise as to the best course to pursue. Had any respectable broker been consulted before purchasing the shares, you would have escaped what you cannot now avoid—a great loss.

"P." (Fowey).—In Mr. Watson's statement of dividend-paying mines in the year 1849, inserted in the *Mining Journal* of the 5th inst., the 900*l.* as there represented to have been paid up by Par Consols adventurers is evidently an inadvertence, as in our Share List the amount is properly stated at 55*l*. Were it otherwise, however, we should not be surprised at errors being committed respecting a mine from which, notwithstanding every attempt, no information can ever be obtained; and although we most readily correct the mistake, we cannot help thinking the complaint, that "erroneous statements are calculated to mislead your readers, and to depreciate, instead of advance, the value of mining property, which ought to be the legitimate object of your Journal," comes with a very bad grace from those who studiously endeavour to withhold all enlightenment, and to keep us in the dark as to how the mine is progressing.

PURE WATER AND SOLID MANURE.—In the *Mining Journal*, of December 15, we noticed a plan for supplying London with distilled water for domestic purposes; and Thames, or other river water for flushing sewers, washing, extinguishing fires, &c., by Mr. G. Remington. We have now received another printed prospectus, in which it is calculated that by saving the manure, this supply might be furnished at the rate of 20 gallons of distilled water, and 1000 gallons of filtered river water to each house per day, with a profit on the solid manure obtained from the sewers, and a charge of 1*l.* per house per annum, of 200,000*l.* a year, or 10 per cent. on the 2,000,000*l.* capital required to carry the plan into execution.

CARTE'S LIFE BUOY.—We have received a communication from Mr. Carte, the patentee of a life buoy for saving lives from shipwreck, on the subject of Dr. Murray's letter, in our last Number, complaining of his having made use of the Doctor's invention for effecting a communication with the shore from a stranded vessel, by means of a triangular sail, with a small mast attached to the buoy, having an unextinguishable fuse at top for night service—which suggestion was first made known by Dr. Murray, on the 6th January, 1849, in our Journal. Mr. Carte informs us that the idea was his own, and that he had the arrangement in practice two years before; and, as a proof of his prior claim, he has forwarded us a small pamphlet, with a wood-cut, representing the buoy sailing shorewards from a vessel, with the bill and receipt of the engraver, at Hull (Mr. R. Johnson), dated September 15, 1847. We have no doubt Dr. Murray will feel this explanation satisfactory, as it is only another instance among the many we continually see of individuals being struck with a mechanical idea, apparently new, but which is eventually found to have been adopted by one or more individuals, quite unknown to each other, and which circumstance does not in the least detract from the merit of either.

THEORY AND PRACTICE OF IRON MAKING.—It is with much regret we decline inserting communications from regular and respected correspondents; but there is a line of demarcation between fair typical sparring and direct personal attack, which we must not overstep. The epistle of "D. M." is so totally unconnected with the subject above named, which is the ostensible one under discussion, and altogether of so personal a nature, involving unfortunate family affairs, which ourselves as journalists, nor the public, cannot possibly have any interest in, that, however unpleasant to ourselves, we must decline it. The writer will remember that, some considerable time since, we were compelled to a similar step; and we must again repeat, we cannot, under any circumstances, render the *Mining Journal* a vehicle for the display of private party feeling; while its columns shall ever be open to fair scientific discussion.

MANUFACTURE OF IRON.—At the conclusion of a long letter (for which we have not space), Mr. W. Radley says—"I can tell Mr. Leighton, that neither oxygen nor carbonic acid is the agent of decarbonisation in the puddling hearth, nor sequel of refinery process. This fact I have known practically 20 years, and upwards."

"M. F." (Regent's-park).—We never advise respecting any particular adventure. Apply to a broker—the addresses of several appear in our advertising columns—and he will readily give you information as to the prospects of the undertaking.

HOT AIR *v.* STEAM.—"J. W." acknowledges that there were "a few slight errors" in his communication, to which Mr. Baggs replied in our last. We regret we cannot make out his corrections, which are as voluminous as the original matter, and appear to us to render "confusion worse confounded." It would be useless to insert the remarks, as they throw not the least light on the matter under discussion, but, to our obtuse faculties, render it more obscure than ever. We are ever anxious that subjects of mechanical interest should be fairly discussed, but, unfortunately, they have become frequently so completely eclipsed in mathematical speculation and algebraic *formulæ*, that the original question is altogether lost sight of.

MINING INVESTMENTS, AT HOME AND FOREIGN.—However far from the subject under discussion the communication of "A Lover of Fair Play," in last week's Journal, may be, we do not think it will be amended by the insertion of that of "Anglo-Celt" in our Number for the present week. If our correspondents are really anxious for the welfare of Ireland, they would do well to discuss the several subjects connected with her interests in an amicable and less antagonistic spirit. While we would not deny that "A Lover of Fair Play" may wish well to Ireland, we cannot help thinking he has rather a queer way of showing it. To attribute the effects of wicked legislation, and the grinding monopoly of the middlemen, to religion or fate, is a species of bigotry we certainly little expected to meet with among the intelligences of the period; and the reiteration of the melancholy catastrophes of Lord Norbury and Major Mahon, is foreign to the question as to what is the most likely means for Ireland's regeneration—only tending to "rip up old sores," and keep party spirit alive. We believe there is a day of prosperity yet in store for Ireland, notwithstanding the many *incubi* which still press down upon her energies.

"H. E. N." (Birmingham).—The quotation of South Caradon, we find, has not been altered since the 3d November last—rather late to complain. A note addressed "Care of the Editor," will be forwarded to the broker from whom we received the correction. We shall be glad to receive the reports.

"A Gurtavalligite."—We never give the names of our correspondents, when they do not attach them to their communications. Address a letter "Care of the Editor," and it shall be forwarded—leaving it to the writer to answer and avow himself, if he thinks proper.

"W. T." (Norwich).—The request shall be attended to.

Roger Lester (Llanidloes).—We are obliged to take the standard as we find it in the ticketing papers; and we think that of the sale on the 3d inst., with produce 7½, and price 5*l.* 1s. 6d., and cake copper 84*l.* per ton, is in proportion with the general calculations. This same standard is, after all, shear clap-trap—it only tends to foster error, and render obscure what otherwise would be simple and easy. What is the value in money of copper ore of a certain produce? is all that the miner need ask the smelter; and the nature of the reply would enable him immediately to judge of his position.

"Young Ventilator."—Sir Humphry Davy found that 1 part, by volume, of light carburetted hydrogen, diluted with 6 parts of atmospheric air, would just feebly explode: with about 10 or 11 parts of air it was the most violent, and with above 14 parts, again it becomes an inexplosive mixture.

"N. P." (Threadneedle-street).—A prospectus was issued for the formation of a company to work "Clitter's Mine," under the name of "Crease's Wheal Annie," but we have never heard the result.

"P." (Westminster).—The latest law work we are acquainted with is Collier's *Treatise on the Law relating to Mines*, notices of which appeared in the *Mining Journal* on the 24th November and 1st December last. Had we received any other, it would have been reviewed in the Journal.

*** Having experienced considerable difficulty in procuring back Numbers, to complete sets of last year's volume, we hope those of our subscribers who intend binding the present year's Journal will be careful in preserving the Numbers as issued, or in obtaining such extra copies as may be required, as soon after publication as possible. The Title and Index was published on the 29th December, 1849.

*** It is particularly requested that all communications may be addressed—

TO THE EDITOR,
Mining Journal Office,
26, FLEET-STREET, LONDON.

And Post-office orders made payable to Wm. Salmon Mansell, as acting for the proprietors.

THE MINING JOURNAL
Railway and Commercial Gazette.

LONDON, JANUARY 19, 1850.

The MINING JOURNAL is published at about Eleven o'clock on Saturday morning, at the office, 26, Fleet-street, and can be obtained, before Twelve, of all news agents, at the Royal Exchange, and other parts of London.

As we intimated in this Journal, a short time since, the existing prices of iron are not to be changed during the current quarter. Since we last mentioned the subject, the ironmasters have held their quarterly meetings, and come to a resolution to abide by the present prices, until they next assemble to regulate the quotations for this great staple commodity for the quarter then next ensuing. Considering the multiplied forms of business which are to a greater or a less degree affected by the state of the iron market, and the particularly important place which it holds in the general working and machinery of the west of England mines, the continuance of prices at their present moderate level must be satisfactory to our mining friends in that district. They must, however, lay their account for a rise of prices shortly; and we think it likely, looking at the activity of business generally prevailing in the Welsh and Staffordshire districts, that the rise, when it takes place, will not be a slight one. Mining shares continue to be an improving and ascending property; and the bargains during the past week have exceeded the average number. The continued surplus of gold and silver laid up in the metropolis, is calculated to raise the prices of almost all species of produce, except in such cases as those in which the demand manifestly falls short of the supply; in such a case, whatever might be the abundance of the precious metals, the prices would go down. In all our leading branches of produce, the market is preserved, however, in so delicate a state of equilibrium, that money, being almost the only thing which is in actual abundance, and, therefore, cheap, our merchandise, wrought and unwrought, is tending generally to an elevation of prices. Things continuing in their present course, it may be reasonably expected that both prices and wages (which is, indeed, but the price of another kind of commodity), in our mines particularly, will undergo very shortly a satisfactory and auspicious improvement.

As time advances, as season progresses after season, the many problems which have been suggested, with regard to the results of the gold produce of California, begin to be most satisfactorily solved, It is now tolerably clear that, so far from the Californian produce depreciating the standard of wealth, and interfering with all our preconceived ideas of the precious metal, as a circulating medium or representation of wealth, and revolutionising all our mercantile and trading principles, the amount which we are likely to receive yearly from this source, will not be greater than what, from the falling off in other sources, and the increasing demand, will be fully required. In our last Number we inserted a paper on this subject, by Mr. EVAN HOPKINS, which is so explicit on the subject, that it would be superfluous to enlarge upon it here, but to which we would call attention. In other columns of this publication will be found an interesting account of a paper read, on Wednesday evening last, at the Society of Arts, "On the present State and Prospects of California," by Mr. WALLS, when a splendid specimen of native virgin gold was exhibited, weighing nearly 7 lbs., with scarcely any foreign matter; and "On the Extraction of Gold and Silver from the Ore by the Wet Way," by Dr. PERCY. All these papers are interesting at the present moment, and important, as tending to the diffusion of correct knowledge, and to sober down those sanguine impulses which are too apt to be encouraged by our neighbours across the Atlantic, and which have already had too much influence even in England; while the circulation of correct data will lead to an earlier colonization of this extensive and, doubtless, fertile region, and realise to the world all those advantages, in an agricultural, mineral, and maratime sense, for which, we believe, she is so justly famed.

In our last Number, we briefly noticed that at the first meeting of the Royal Commissioners for arranging the proposed Exhibition of Universal Industry in 1851 (yesterday week), they had resolved to give notice to the Messrs. MUNDAY of the termination of their contract, in accordance with the option reserved to them in one of its clauses. A communication has been published, explanatory of the reason which dictated the commissioners in the course they have adopted, in which they express themselves perfectly satisfied that the contract was formed with the sole desire of promoting the objects of the commission—that the Messrs. MUNDAY, in coming forward when the success of the scheme was doubtful, evinced a most liberal spirit, and afforded the means of hitherto defraying all preliminary expenses; while the conditions of the contract were not only strictly reasonable, but even favourable to the public. After, however, a full consideration of the subject, they concluded that it will be more consonant with the public feeling, and, consequently, more conducive to the objects for which the commission has been appointed, to exercise the power reserved at once, and absolutely to terminate the contract. This determination necessarily throws the whole burden of the exhibition upon voluntary contributions. The experiment is of a national character, and they feel that it ought to rest on national sympathies, and on such contributions as such sympathies may dictate. They state it to be their intention to invite competition in every branch of expenditure to which competition can be applied, to establish an effectual control over the expenditure, and a satisfactory audit of the accounts. It is desirable that subscriptions be immediately commenced throughout the kingdom, that the probable result may be ascertained with the least possible delay. In the meantime, the commissioners will be actively engaged in preparing the various measures to be decided upon, as soon as they can ascertain the probable extent of funds to be placed at their disposal.

Such is the spirit of the first deliberation of the parties entrusted with the control and arrangement of this unique undertaking, and they appear to have evinced a disposition to grapple with the difficulties of the subject in a business-like manner. While it is but justice to Messrs. MUNDAY to say, that they appear to have been actuated more by a public-spirited wish for the success of the exhibition than the profit derived from jobbing with capital (a charge distinctly made by one of our hebdomadal contemporaries, on Saturday last, with, we think, exceeding bad taste, and followed up by very ill-timed remarks;) it must be acknowledged that the avoidance of every circumstance which can by any possibility be construed into individual aggrandisement, so repulsive to British feeling when under the guise of public advantage, will tend more to the success of the undertaking than the following out the contract, by which private property was to be the leading principle. The public are now clearly aware that, on voluntary contributions alone depends the success or failure of the scheme; that there now exists no under-current in the shape of personal profit, by which the funds can be swept away; and they have a right to expect, from the names in the Royal Commission, that the resources derived from this public subscription will be duly devoted to the purposes contemplated, and that the most strenuous exertions will be made to render the exhibition one of universal advantage to the interests of art, science, and commerce.

As a proof that the commissioners are anxious to proceed in the right direction, we may state that we understand they have written to the Marquis of LONDONDERRY for his opinion as to the best means of giving a full exposition of the colliery interests of the world; to Sir C. LEMON the same, with regard to copper, tin, and lead; and to W. CRAWSHAY and J. BAILEY, Esqs., and Sir J. J. GUEST, Bart., for their assistance, with regard to iron—than whom, for their wealth, influence, and personal experience in these several interests, it is probable no five individuals in the kingdom could have been found more capable of rendering valuable assistance, and to which appeal we have no doubt they will cheerfully respond. The executive committee have also issued a circular to the mayors of all towns in the United Kingdom, having a municipal constitution, inquiring whether a local committee has been established within the town; and, if not, requesting him to communicate with the principal inhabitants, for the purpose of ascertaining whether the circumstances thereof render a local committee advisable; where local committees do exist, to ascertain if local commissioners are required; and, if it is so considered, to write to the executive committee, stating on what grounds, what number required, and names proposed, with the particular manufacturing interest with which each is connected. They point out the inexpediency of nominating too large a number, and suggest that they should be as few as is consistent with the due representation of the local interests; the duties will be chiefly to collect evidence, and report on the various subjects connected with the exhibition; and the Royal Commissioners will, at all times, be glad to receive from them such suggestions as they may think it desirous to make. They will also, if required, be furnished with copies of all publications, which the executive committee may issue upon the business of the exhibition.

We understand that the QUEEN, and his Royal Highness Prince ALBERT, have commenced the subscription for carrying out the Exhibition of the Industry of all Nations—Her MAJESTY by giving ONE THOUSAND POUNDS, and the Prince FIVE HUNDRED POUNDS.

In the deepest and darkest depression of the railway interests of the kingdom, the public, we believe, never for a moment doubted the ultimate revival and restoration of that great national interest; not that it was in any sense desirable—nay, there is scarcely a sane man living who would not deprecate the renewal of the railway *furor* of 1846-47—but the collapse which followed so soon upon that extravagant period of excitement bore down with it a number of sound and profitable lines of railway, which, if they had not been carried away by the torrent which at that time swept through the whole railway world, would at this moment be in the highest class of working and productive lines. Our readers will, perhaps, give us credit for knowing something of the county of Cornwall—its wants and its capabilities. We are, in fact, in constant communication, more or less, with those who have a vital interest in the prosperity and enlargement of its mines and its general merchandise; and we do but affirm their sentiments when we declare (feebly, perhaps, but still most faithfully) that a railway connecting the entire county by the directest line possible with Exeter and the metropolis, is the want which most heavily and most constantly presses upon the undeveloped resources of that rich and improving district. We have seen no absolutely conclusive estimates of the amount of capital requisite to construct and furnish a line of railway of 100 miles in length going down directly west from Exeter, but we have the fullest reason to believe it could be finished in that district at an expenditure very much below what would be necessary for a line of the same length in any other district of the kingdom.

The labouring classes in Cornwall have a natural qualification and aptitude for tunnelling, embankments, and works of excavation generally; and the mere labour, a most important element in the expense, would, in their hands, proceed rapidly and economically. The traffic of the district, first, in general merchandise, in metallic ores, which go to and fro in the county in tens of thousands of tons annually, in slate, granite, and fish; the large passenger traffic, which the rapid transit of railway trains would encourage and bring out; and, lastly, the increase of business in the ports of both coasts, and especially at Falmouth, which would, in all probability, regain both its place and privileges as a packet station, make, as far as we can judge, so large and lucrative a carrying business for the lines, that its first earnings would necessarily yield a dividend of 10, or of 12½ per cent. to those who have the spirit and the practical ability to engage in it. It is a question mainly to be settled by the mining gentry of Cornwall. We trust they will give it a just consideration; there is at this moment, as we think, nothing to hinder their entire success. The line to Plymouth, for which an Act of Parliament was obtained some years since, is, practically, a perished line. We doubt the legal competency of its promoters to construct it now, if the capital was procurable for so ill-considered an undertaking. Because it is but reasonable, that if a great public work is to be done under perfectly *new* circumstances, that the parties should seek a *new* consent of the Legislature. They appear to us to have lost their right by non-performance; but that is a question for those gentlemen of the robe who have dipped so deeply into the funds of that unhappy company; our only care and anxious wish is to see the county doing justice to its own circumstances and resources, by creating for itself an efficient and independent county railway.

ASTURIAN MINING COMPANY.—The directors and liquidators have issued a circular to the shareholders, announcing that in consequence of the non-payment of the call by a large majority, which would not justify them in recommending a forfeiture, as a last resource they recommend a dissolution and winding-up under the Joint-Stock Company's Winding-up Act, 1848, whereby payment of the portion of the 14th instalment still in arrear may be enforced. A serious objection, however, presents itself to this measure—the heavy expenses of the Court of Chancery. At the private meeting of the 8th, it was proposed, as an intermediate course, to raise a loan; but, in the present condition of the property, it would be hopeless to look for advances, save from the shareholders. The present liabilities of the company are stated to be 22,267*l.* 13s. 11d.; while the effective assets are stated to be 80,193*l.* 4s. 9d.; from this must be taken the plant, valued at 75,000. The estimate of working capital required would be 20,000*l.*, and the profits of the present establishment, under the new company, are calculated at 22,000*l.* per annum—the make of iron being supposed to be 3120 tons. The superintendent, Mr. Lumbley, having calculated that 1 large blast furnace, with 7 puddling, 3 ball, 1 sheet, 1 slab-furnace, and 1 refinery, will yield per week 1484 quintals of pig-iron, converted into 60 Spanish tons of wrought-iron, at a total cost of 8*l.* 15s. 10d. per ton, including 60*l.* per week for holidays, office expenses, &c. The profits to be appropriated according to the new deed as follows:—No. 1, Interest 5 per cent. on debt (say 50,000), 2500*l.*—2: 5 per cent. on preference stock (50,000), 2500*l.*—3: 10 per cent. of profit to sinking fund, 2000*l.*—4: 5 per cent. of profit to reserve fund, 1000*l.*—5: 3 per cent. dividend on permanent stock (50,000), 1500*l.*—6: surplus profits to sinking fund, 10,500*l.*=20,000. Mr. Moore has addressed a letter, calling on the shareholders to co-operate with him in raising a loan, so as to avoid being obliged to make an imprudent sacrifice of the property by a forced sale, or bring the company into the Court of Chancery.

COMPANY OF COPPER MINERS IN ENGLAND.—In October last, we stated that the shareholders' committee, appointed at the general court, held in April, intended to apply, in the ensuing session of Parliament, for a bill to amend the Charter. A copy of this bill is before us; but being too voluminous to give *in extenso*, for the benefit of those interested, we give a condensation, divested of its verbosity and legal technicalities. The bill is divided into 21 clauses. It states that, on the 3d of August, 1691, King William and Queen Mary incorporated divers persons to manage and carry on the smelting of copper ore as a joint-stock company, granting them certain privileges. These were further confirmed on the 22d September in the same year, when their licenses were extended to the kingdom of Ireland. Other letters patent were granted the 9th of February, 1711, by Queen Anne, which made certain alterations in the election of the officers of the company. That prior to the year 1841, the stock of the company consisted of 7600 shares, of the nominal value of 13*l.* each. In that year, the governor and company resolved on the further issue of 2400 shares—the value of these, and the previous shares, being represented at 28,835*l.* 11s. 8d. That in the year 1846, a large sum of money was raised by the issue of preferential shares, of 25*l.* each—the holders being entitled to a preferential dividend, at the rate of 1*l.* 7s. 6d. per annum, on each share paid up in full, or according to the instalment paid up; the amount raised by such preferential stock being represented by the sum of 281,300*l.*, which, with the conversion of the old stock, makes the present capital to be 328,835*l.* 11s. 8d. That the debentures issued, from time to time, including 150,000*l.*, in possession of the Bank of England, and 115,000*l.*, held by creditors as collateral security, amounts to 611,625*l.* After reciting the different mortgages to the Bank of England, and the circumstance that the whole property is at present in their hands, and that they are willing on advantageous terms to give up their mortgages, and that several holders of the different stocks are willing to compound their claims with the company, but that great legal difficulties exist at present, which cannot be obviated without the aid of Parliament, which, if not granted, will cause numbers of poor industrious persons to be thrown out of employment, they, therefore, request a confirmation of the letters patent, and the incorporation with them of the Companies' Consolidated Act of 1845, with respect to the distribution of the company's capital into shares, means of inforcing payment of calls, and the forfeiture of shares for non-payment of calls, and the borrowing of money by the company on mortgage, or bond, &c. It further regulates the proceedings at meetings of debenture holders and creditors; four-fifths of the debenture holders, representing at least two-thirds of the stock present at the meeting, to be authorised to resolve on the conversion of debentures into stock; at any extraordinary meeting, after the passing of the Act, the proprietors may resolve to reduce the stock; the governor and court of assistants to have power to create preference shares, not to exceed in the aggregate 150,000*l.*, or such further sum as granted by the consent of the company. On the reconveyance of possession by the Bank of England, the property to be vested in the company, freed from all claims, by holders of debentures, promissory notes, loan notes, or creditors. Auditors are to be elected by the shareholders—it not being necessary for them to be holders of stock; and to have free access at all times to the books of the company, and to be salaried. The number of assistants are not to exceed *ten*; it is not obligatory on the company to elect a larger number than five—three-fifths of the number, with the governor or deputy-governor, to form a quorum; their qualification to be 500*l.* stock. If any of these should die, resign, or become disqualified, the court may elect in their stead some other shareholder to fill up the vacancy; but he is only to continue in office as long as the person in whose place he shall have been elected would have been entitled to continue, should he remain in office. The company shall not borrow at any time any amount exceeding one-third of their stock or share capital; the Act to be a public Act, and judicially taken notice of as such. As there is no probability that any opposition will be offered to this bill, there is every reasonable hope that, at an early period, after the sitting of Parliament, the committee will be able successfully to terminate their labours by the resuscitation of the company.

DANGERS OF CHARCOAL STOVES.—In the *Times* of yesterday, there is a communication from Mr. Charles Boyle, of Southampton-buildings, which ought to prove a warning to all persons from purchasing those stoves, for burning charcoal without a flue, which are puffed up by every description of quackery and deceit, and for which, if the parties selling them had their deserts, they would, long before this, have received the punishment due to manslaughter. Mr. Boyle, though under much misgiving at first, was induced—from the plausible assurances made by the maker, that it was not only smokeless, but, by using a high-priced *prepared* charcoal, only sold by him, it was a *self-consuming* stove—to purchase one for a small close office, without a chimney, 5 ft. 6 in. by 7 ft. 6 in., in which sat a boy, as a junior clerk. Pleased with his bargain, the fire was lit, on Thursday week, but the air felt dreadfully heavy, and smelt offensive; the next day it was equally so; but on the Saturday, the poor little fellow having inadvertantly shut his door, he suddenly felt sick and giddy, and having presence of mind sufficient to enable him to rush to the door knob, he fortunately opened it, and rolled out on the staircase perfectly insensible; a surgeon was instantly sent for, and he was in a few hours recovered, with, however, a very narrow escape of his life. We are astonished how any person in the present age of knowledge can be so led by quackery and empiricism, as to act in opposition to their own sound judgment; the merest tyro, or school-boy, now knows that wherever there is fire, there must be given off the natural productions of combustion. With charcoal the principal one is carbonic acid, a gas instantaneously destructive of animal life, if only one inhalation is taken pure. When there is no chimney or flue to carry this off, it must deteriorate the atmosphere; and this has been shown in so many public prints, and by none more than by the *Mining Journal*, particularly in Dr. Murray's communications, that we again repeat, it is really extraordinary that people can be so easily led to act diametrically opposite to their own convictions.

ON THE MANUFACTURE OF IRON.

From the discussions which continually appear in our columns on the most perfect manipulation in the manufacture of iron, the various theories propounded, and the numerous antagonistic opinions displayed as to the nature, action, and effects of the contents of the blast furnace, and the character of the general results, lookers-on cannot but be struck with the idea that there is yet a wide field open for improvement in metallurgical chemistry—at least, as far as regards the operation in the reduction of iron ores, and their conversion into merchant metal and steel. Many useful publications on this all-important subject have, within the past dozen years, issued from the press, among which we may mention the much-famed work of David Mushet, and the *History of the Iron Trade*, by Harry Scrivenor, Esq., detailing the latest discoveries and improvements up to the time of their issue. We have now to announce the appearance of another valuable work on the subject, which, in our humble opinion, supplies any deficiency which later improvements and discoveries may have caused, from the lapse of time since the date of the before-mentioned publications. It is the production of one of our trans-Atlantic brethren, Mr. Frederick Overman, mining engineer,* and we do not hesitate to set it down as a volume of great importance to all connected with the iron interest; one which, while it is sufficiently technological fully to explain chemical analysis, and the various phenomena of iron under different circumstances, to the satisfaction of the most fastidious, is written in that clear and comprehensive style, as to be available to the capacity of the humblest mind, and, consequently, will be of much advantage to those works, where the proprietors may see the desirability of placing it in the hands of their operatives. That in the delicate operations of all metallurgical changes, experience must guide the operator in his manipulations, we are quite aware; but it is also true that the longest experience may be much more advantageously employed when guided by the light of science, and when the knowledge of the various chemical changes, and the effects and affinities of the several elements, is conveyed to the furnaceman's mind in a clear and intelligible form, without any tendency to obfusticate his ideas, and render nugatory the practical experience he had previously possessed. Such we believe to be the nature of the work before us, every chapter of which may be read with advantage, from the operative to the ironmaster, and with satisfaction by the studied man of science. The author very naturally commences his first chapter with a description of the various iron ores, under the heads of native oxides, subdivided into protoxide, magnetic black oxide, peroxide, and hydrated oxide of iron; carburets, sulphurets, subdivided into the white and yellow sulphuret of iron; phosphurets, arseniurets, chlorides, sulphates, phosphates, carbonates, subdivided into sparry and compact carbonate; the titanite, chromate, and Franklinite, or dodecahedral iron ore, with some general remarks, in which he states that the ores of iron are distributed over the whole globe in great profusion. They are found in every latitude, and in every clime; but every mineral which contains iron does not constitute an iron ore. The consideration of quality and quantity determines the application of a mineral species to the manufacture of iron. The metals, with the exception of gold, silver, and copper, are seldom found in their native state; they are combined with other matter in their native beds, and it is the study of the metallurgist, by dissolving this combination, to reduce them to their simple condition. The following passages on the affinity of metals for sulphur, and on mining, are fair specimens of the style:—

The affinity of the metals for oxygen is different in different metals, and varies with the temperatures under which the combinations are formed. Some are oxidized by a temperature below freezing, as potassium or manganium; others by the medium temperature, as zinc, tin, lead, iron, &c. Some cannot be oxidized by the atmosphere at all, as gold, platina, silver. Most of the metals can be combined with oxygen by being dissolved in nitric acid, or nitro-muriatic acid (aqua regia). Some metals decompose water readily; such are potassium, sodium, and the metals of the alkalies generally; but iron and zinc decompose water slowly. If, however, an acid be added to the water which dissolves the oxide formed, the decomposition of water goes on rapidly. In all these instances the oxygen of the water is absorbed by the metal, and the hydrogen liberated. Some metals cannot be oxidized by means of acids, nor directly by the atmosphere, as rhodium and irridium, but oxidize very easily by being previously melted together with potash or saltpetre. Chrome, and a few others, are of this kind.

On mining, the author says:—

Mining is an art; "it is a highly cultivated mechanism," says Andrew Ure. Where science and art have liberally spent their means, architecture, machinery, and plastic arts impart instruction, through the medium of the eye, to the mind, by the display of their respective master-pieces. But this is not the case in the art of mining. An adequate idea of the high cultivation to which this branch of skill and industry has been brought, cannot be exhibited at one view, because there is no one point of view from which any other art can be completely sketched. The subterraneous structures present some of the most interesting monuments of the genius of the human mind. Cultivated, for many centuries, under the guidance of science and industry, they are not, and cannot be, however great and ingenious, the objects of panoramic representation. The philosophical mind alone can contemplate and survey them, either in whole or in detail. And therefore these marvellous regions, in which roads, often many miles long, are cut and highly perfected, are unknown to the mass of the people, and disregarded by men of the world. When chance, curiosity, or interest induces such to descend into those dark recesses of our world they merely discover a few insulated objects which make a vague, indefinite impression on their minds; but the symmetrical disposition of the minerals, and the laws which govern geological phenomena, which serve as guides to the skilful miners, they cannot recognise. From exact plans of the underground workings alone can a knowledge of the nature, extent, and distribution of the useful minerals be acquired.

The author then describes the several practical methods of roasting various woods, the charring of wood and peat, and the burning of coke, analysis of fuel and heat liberated, various methods of reviving of iron in different countries, management of blast-furnaces, theory of the blast-furnace and its products, manufacture of wrought-iron, description of puddling-furnaces, and remarks on the operations of refining, forging, squeezing, and rolling sheet-iron, reheating furnaces, heating ovens, shears and turning machines, and tools in general, descriptions of various blast machines, tuyeres, &c., concluding with a chapter on the manufacture of steel. There is also an appendix, containing a number of useful tables, the whole published in excellent type, on good paper, and illustrated with 150 wood engravings. We have no hesitation in recommending this work to the attention of all interested, as one which will not only pay for perusal, but will become a standard work among iron manufacturers.

* "The Manufacture of Iron, in all its Various Branches; comprising a Description of Forge Hammers, Rolling Mills, Blast Machines, Hot Blast, &c.: to which is added, an Essay on the Manufacture of Steel;" by Frederick Overman, mining engineer. With 150 wood engravings, executed by W. B. Gihon. London: G. P. Putnam, Bow-lane, Cheapside. Philadelphia: Henry C. Baird, successor to E. I. Carey.

The Iron Trade in France.—In consequence of a desire on the part of the French ironmasters to be on good terms with the railway companies, they have given way in price, rather than foreign iron should be admitted at the reduced duties. The consequence has been some rather extensive orders for rails, which has kept the trade at St. Dizier and St. Etienne fully alive; there is, however, large importations of iron and coal still going in from Belgium. The Post-office authorities intend during the year to contract with private companies for the transmission of the foreign mails on a similar plan to the English contracts; this will prove advantageous to the merchant marine, which at present has not a single steam-ship. Great exertions are making in fitting out the Government war steamers, which has caused a demand for English copper.

Mining in Spain.—There has been a considerable advance in mining operations in the peninsula during the past year, and several valuable concessions have been made by the Government, on favourable terms, to parties who are likely to work them on an extensive scale. The Government appear disposed to give every encouragement to mineral development, and it is probable that, during the current year, much activity will prevail. The alteration in the tariff, admitting machinery and raw material from England at an *ad valorem* duty of from 10 to 15 per cent., has given an impetus to this branch of trade. This alteration will probably cause the so-long projected railways to be completed, as with this modification in the duties speculators can embark with safety.

Tracts on Legislative Interference in Colliery Management.—We have received Nos. 2 and 3 of the penny tracts now publishing monthly in Newcastle-upon-Tyne, on the necessity of legislative interference in protecting the lives and health of the colliers; and, as far as the publications themselves go, we must admit, they contain the most recent, as well as the most advantageous, information extant on facts relative to colliery working and ventilation, which being impressed upon the mind of the working miner, will tend to make him a more serious thinker, and less reckless individual. In No. 3, for the present month, there is a general acknowledgement of the readiness with which the press has noticed the objects and intentions of the publishers, as also for some subscriptions to be applied to the colliers' interests; among such subscribers we find the name of G. W. M. Reynolds, for 1*l.*, one which, under the circumstances in which it figured during the Chartist follies, and in a still more grave and disgraceful manner in the Bankruptcy Court, and in his present commercial position, is a disgrace to any, the most humble, institution which he might profess to uphold. The well-wishers of the colliers would advance their objects far better without such a name than with it. Nor do we think the steps taken by Mr. Wyld last autumn, in going among the colliers, and calling a public meeting for the redress of grievances, was by any means well advised; it was only misleading the men, as that gentleman knew the Government were preparing remedial measures, which has been since fully borne out, and to whom he was directly opposing himself.

Merthyr—the Strike of Colliers in Aberdare Valley.—The sea colliers in the Valley of Aberdare are out still. It is a thousand pities that masters and workmen should suffer so much; the former losing the interest of capital, and the latter even the common necessaries of life.—*Swansea Herald.*

Silk and Spider's Lines.—The silk line, as spun by the worm, is about the 500th part of an inch thick; but a spider's line is, perhaps, six times finer, or only the 3000th part of an inch in diameter; insomuch that a single pound of this attenuated substance might be sufficient to encompass our globe.

STATISTICS OF COPPER, LEAD, AND TIN.

We now proceed to lay before our readers the conclusion of the returns of the sales of copper, lead, and tin ores for the quarter ended 31st Dec. last. The sales at Swansea show an increase of 1649 tons—52,779*l.* 19s., and 1*l.* 11s. 6d. per ton addition on the average price, as compared with the quarter ended 30th Sept.; they stand respectively as follows:—

	Tons.	Amount.	Average Price.
Quarter ended Dec. 31	11,212	£157,694 0 6	£13 11 10
Quarter ended Sept. 30	9,563	104,914 1 6	12 0 4
Increase	1,649	£52,779 19 0	£1 11 6

And with the corresponding quarter of 1848, as follows:—

	Tons.	Amount.	Average Price.
Quarter ended Dec. 31, 1849	11,212	£157,694 0 6	£13 11 10
Quarter ended Dec. 31, 1848	13,689	167,877 17 0	12 5 3
Decrease	2,477	£10,183 14 6	Inc. £1 6 7

Being a decrease on the returns of 2477 tons, and 10,183*l.* 14s. 6d., but an increase on the average price of 1*l.* 6s. 7d. per ton, arising, no doubt, from the higher dressing which the foreign ores receive before being shipped for England.

This amount of ores sold at Swansea was made up as follows:—

	Tons.	Amount.	Average Price.
Foreign	7870	£135,414 18 6	£17 4 2
Irish	2572	20,254 15 6	7 9 8
Welsh and sundries	770	2,024 6 6	2 12 6
Total	11,212	£157,694 0 6	£13 11 10

The above 7870 tons of foreign copper ore consisted of—

	Tons.	Amount.	Average Price.
Cobre	4803	£66,982 14 0	£13 14 9
Australia	1765	44,298 11 6	25 2 0
Cuba	464	10,711 12 6	23 1 8
Copiapo	432	9,691 1 0	22 8 8
Santiago	406	3,730 19 6	9 2 10
Total	7870	£135,414 18 6	£17 4 2

And the 2572 tons of Irish copper ore as follows:—

	Tons.	Amount.	Average Price.
Berehaven	1772	£14,953 19 6	£8 8 9
Knockmahon	537	3,757 3 6	7 0 0
Ballymurtagh	124	490 14 0	4 0 0
Lackamore	67	459 6 0	6 17 0
Laxey	47	182 2 6	3 17 5
Gurtnadyne	21	179 11 0	8 11 5
Cronebane	2	66 0 0	33 0 0
Tigrony	2	66 0 0	33 0 0
Total	2572	£20,254 15 6	£7 9 8

The following are the companies by whom the several ores, sold at Swansea by public ticketing, were purchased:—

	Tons.	Amount.
English Copper Company	684	£9,555 15 3
Freeman and Co.	625	5,178 15 6
Grenfell and Sons	1252	15,919 12 6
Crown Copper Company	136	1,224 6 6
Sims, Willyams, and Co.	1233	20,004 1 0
Vivian and Sons	2170	26,675 6 6
Williams, Foster, and Co.	2643	35,910 17 6
Mines Royal	371	5,216 5 3
Schneider and Co.	524	9,072 15 9
Benj. Smith	785	15,949 11 6
British and Foreign Copper Company	535	6,597 0 9
Mason, Elkington, and Co.	284	4,389 12 6
Total	11,212	£157,694 0 6

LEAD.

The sales of lead ore, by public ticketing, in Wales, Cornwall, and in London, amounted to 8617½ tons, and produced 107,913*l.* 17s., being an increase over the quarter ended Sept. 30, 1849, of 780¾ tons, and money 14,854 5s. 6d.—the latter having been 7836¾ tons, and 93,059*l.* 11s. 6d. The above quantity was the produce of the following mines:—

Mines.	Tons.	Amount.
East Wheal Rose	906	£ 12019 4 6
Lisburne Mines	715	7320 8 9
Tamar	272	5603 16 0
Newtownards	462	4497 3 0
Wheal Mary Ann	285	4116 19 6
Fronfownog	363	4064 1 6
Goginan	270	4057 2 6
Trehane	178	4052 19 0
Laxey	200	3997 10 0
Trelawny	216	3985 11 0
Talacre	300	3505 0 0
Maes-y-safn	300	3018 15 0
Hendre	290	2921 0 0
Maesyrerwddu	283	2890 9 6
Deep Level	275	2773 2 0
South Australia	191½	2356 8 6
Pen-yr-henblas	234	2429 1 0
Herodsfoot	176	2153 16 0
South Tamar	125	2140 14 6
Milwr	176	1950 14 0
Foxdale	133	1834 3 0
Pant-y-celyn	151	1792 15 0
Cwmystwith	170	1720 15 0
Jamaica	170	1711 5 0
Machynlleth	165	1696 13 0
Conlig	160	1650 0 0
Callington	85	1445 3 6
Cairnsmore	120	1167 0 0
Coetia Llys	104	1144 14 0
Shallee	81	1056 13 3
Westminster	110	1052 0 0
Strontian	90	958 10 0
East Tamar	70	932 15 0
Belgrave	85	860 15 0
Cwm Sebon	54	857 5 0
Peel	75	849 8 9
Wheal Adams	95	846 17 6
Llanfair	26	655 5 0
Pantymwyn	64	636 1 0
Holmbush	30	558 7 6
Caeconroy	38½	502 8 6
Pantyffrith	40	474 0 0
Wheal Golden	38	457 18 0
Arkansas	20	388 10 0
Rhoswyddol	40	385 10 0
Black Craig	38	356 5 0
Tregorden	10	308 5 0
Nanteos	30	285 15 0
Cwm Erfin	20	252 0 0
Barristown	22	244 15 0
Bryn Arian	20	217 10 0
Dyfngwm	16	157 19 0
Aberduna	12½	122 15 6
Garros	7	77 0 6
Rhewarch	7	74 14 6
Halkin Hall	6	58 16 0
Nant Melyn	3	30 [illegible] 0
Pant Ddu	3	28 11 6
Brynford Hall	1	10 5 0
Total	8617½	£107,913 17 0

Companies by whom the above lead ores were purchased:—

Companies.	Tons.	Amount.
Walker, Parker, and Co.	3113	£36,696 2 3
Newton, Keates, and Co.	1676	18,502 12 9
Tamar Smelting Company	546	9,194 2 0
Sims, Willyams, and Co.	607	8,429 15 0
Mather and Co.	733	7,956 14 3
Pontifex and Wood	427	7,950 8 0
J. Somers	322	5,162 7 0
Panther Smelting Company	365	3,796 8 9
R. Michell and Son	245	3,222 12 6
J. P. Eyton and Co.	278½	3,040 19 6
J. T. Treffry	160	2,020 18 6
Locke, Blacket, and Co.	73	1,209 19 6
Penpoll Smelting Company	72	730 17 0
Tons	8617½	£107,913 17 0

TIN.

We close these returns with the following tickstings of black tin in Cornwall, being all which we have been able to obtain, and which is less than those of the previous quarter by 21 tons 5 cwts. 2 qrs. 6 lbs.—the present amount being 406 tons 10 cwts. 1 qr. 9 lbs., and 16,314*l.* 2s., and the previous quarter 427 tons 16 cwts. 0 qr. 15 lbs., and 17,065*l.* 1s. 9d. The above quantity was sold from the following mines:—

Mines.	Tons	cwts.	qrs.	lbs.	Amount.
Great Polgooth	180	10	0	0	£7464 5 0
Polberrow	71	10	0	0	2831 7 6
Tincroft	30	9	0	16	1388 18 2
Lewis Mines	28	0	0	7	1041 0 2
Drake Walls	22	17	1	16	932 11 0
West Wheal Jewel	14	0	0	0	585 5 0
Charlestown United	10	0	0	0	406 1 10
Wheal Anderton	9	0	0	0	399 2 6
Beam Mine	4	4	3	24	214 12 0
Birch Tor	4	10	0	0	209 4 0
South Friendship Wheal Anne	4	15	0	0	196 5 7
Runnaford Coombe	4	0	0	0	168 0 0
Ashburton United	4	10	3	2	182 13 3
Haigaston Down	4	3	0	0	132 8 6
East Crowndale	3	0	0	0	123 7 6
Wheal Friendship	2	0	0	0	69 0 0
Total	406	10	1	9	£16,314 2 0

Companies by whom the above black tin was purchased:—

Companies.	Tons	cwts.	qr.	lbs.	Amount.
Daubuz and Co.	74	16	2	14	£3164 0 7
Williams and Co.	75	6	2	19	3055 13 11
Calenick Company	70	14	2	19	2907 18 2
Unknown	74	19	3	25	2685 19 0
Bissoe Company	53	2	2	0	2163 13 2
J. H. Enthoven and Co.	46	1	3	21	1872 4 3
Union Tin Smelting Company	11	7	3	23	464 12 11
Total	406	10	1	9	£16,314 2 0

THE SUBTERRANEAN WEALTH OF GREAT BRITAIN.

In the *Edinburgh Review* for the present quarter there appears an elaborate article on the necessity of adopting legislative measures to diminish the number of accidents in mines and collieries, the importance of preserving mining records, with a general review of British mining; and as the subject is appropriately chosen for the present moment, when legislative measures for the benefit of the miner and collier are in contemplation, we insert a general abstract of the paper. The author commences by showing that Great Britain is indebted for its colonization in the mists of time, and, according to some historians, even for its name. The most ancient nations resorted to it for tin, and other metals; and Julius Cæsar was attracted to its shores by rumours of its mineral wealth. To show its present importance, the following data are given from Sparkman's *Analysis of the Occupations of the People*:—193,000 persons are actually employed in the mines, and 142,000 more in the strictly metallic arts and manufactures. The entire population depending on mining was, in 1801, 394,212; in 1841, 799,918; and now, probably, little short of a million. The annual profit rated to the income-tax was, in 1801, 2,000,000*l.*; in 1841, 3,600,000*l.*; and now, certainly, above 4,000,000*l.* The yearly produce of copper is stated to be 15,000 tons; of lead, 50,000 tons; and of tin, 5000 tons. Mr. Porter, in his *Progress of the Nation*, states the produce of iron to be 250,000 tons annually. Mr. Taylor, in his *Statistics of Coal*, 1848, estimates the produce of coal at 34,754,750 tons in 1846. Many years ago the total annual produce of British mines was estimated at 25,000,000*l.*; and M. Verlet, in 1837, published the following comparative table of the mineral produce of Europe:—Great Britain, 1; Russia and Poland, $\frac{2}{3}$; France, $\frac{1}{4}$; Austria, $\frac{2}{15}$; Spain, $\frac{1}{8}$; Prussia, $\frac{1}{6}$; Sweden, $\frac{2}{15}$; Hartz, $\frac{1}{12}$; Tuscany, $\frac{1}{51}$; Bavaria, $\frac{1}{120}$; Saxony, $\frac{1}{24}$; Piedmont and Savoy, $\frac{1}{88}$; Denmark, $\frac{1}{48}$; Norway, $\frac{1}{52}$. The question of the durability of our coal-fields, and other minerals, is then considered; and it is remarked that the very magnitude of these vast operations tends to create apprehension as to their durability; and that the prophecy of Mr. Bakewell, "We may anticipate the period, not very remote, when all the English mines of coal and ironstone will be exhausted," is now much nearer completion than he could see in a day of far less activity and enterprise. In a note, however, a confident hope is expressed that ere that period arrives science will have made new discoveries on heat, or electricity, by which all necessary operations, both for domestic purposes and motive power, will be effected in far more elegant and less oporose methods than the combustion of coal.

The author next considers the importance of preserving precise records of operations and discoveries in underground workings, and regrets that while in some parts of the continent a rigid system of registration is insisted on by the Governments, there is no British mine, deep or shallow, of which the operations are so recorded as to be certainly and safely depended upon for the guidance of the future adventurer, after the lapse of a few years. In England the mines belong to the proprietors of the land, and the State has consequently been excluded from superintendence, the unfettered management falling on a very large and unconnected body of private owners. In the early times of mining, when the veins were all worked near the surface, and on a small scale, no great national necessity called for direct control; but in the deep and gigantic works of the last half century, and in the recent enormous extensions of mining operations, it became evident that the want of a national system required to be remedied by private arrangements. Many enlightened proprietors have accordingly sought to procure plans of mines, and lords of extensive manors have insisted in their leases that plans of all underground operations should be made. If such a system was universal, and well conducted, there would be little to be desired; but, upon the whole, few proprietors have adopted it. What plans and sections are made are very meagre, badly executed, and founded upon surveys, either wholly inaccurate, or on which no dependence can be placed. It is stated, as well known to those conversant with the subject, that numerous invaluable records of the past 60 years, in the coal districts of the north, are subject to lingering decay, or irrecoverably lost; that every passing year adds to the irreparable ruin; and that the day will finally come when their loss will be made memorable by most deplorable disasters. A variety of calamities, from the flooding of collieries from old workings, are then recorded, from want of a knowledge of old adjoining excavations.

After a lengthened review of the evils likely to result to the future miner from this want of registration, and the inadequacy of our mining laws, the author states that, so long ago as 1797, public attention was called to the subject in a small tract, by Mr. T. Denton. A more earnest appeal was made by Mr. Chapman, a civil engineer, in 1815, but no active steps were taken. In 1830 the establishment of a place of deposit for mining records was a leading object in the formation of the Newcastle Natural History Society, in whose *Transactions* there is a plan for preserving records by an eminent colliery agent. The question, however, made no practical progress—no plans were deposited. In 1838 the subject was brought prominently forward before the geological section of the British Association for the Advancement of Science, at Newcastle, strong and sound resolutions were passed, and from this body emanated the establishment of the Museum of Economic Geology. All appropriate preparations are made, but the realisation of the system appears as distant as ever. With one exception, no plans have been sent in even there, and it is now manifest that a national system of registration can only be procured, like other national objects, by an act of the Legislature; registration must no longer be voluntary, but compulsory.

The author then calls attention to the bill for establishing district registers of all mines and mining operations in England and Wales, printed by order of the House of Commons in August, 1844, and which we noticed in our columns at the time. He observes that, although doubtless many objections will be made, really the trouble of making and keeping up plans is quite unworthy of consideration. Those who do not keep such plans will be largely benefitted by being compelled to adopt measures of common caution, for no mine can be properly worked without a proper plan. Instead of order, design, and regularity, there is, in such case, a mere trust to the chapter of accidents—a haphazard and inevitable confusion—a waste of mineral, capital, and labour. The time has now plainly arrived for the interference of the State; both public and private interests are at stake; the increasing difficulties of mining must be counteracted by provident arrangement and greater scientific research; the results of much costly experience have already been irrecoverably lost. Geological science has been deprived of many facts, and, consequently, lost many opportunities for their useful application. In stratified mines the services of science are eminent; the extensive coal fields under the magnesian limestone of Durham, and the successful pursuit of coal under the red sandstone of Staffordshire, in spite of the prophecies of *practical* men, are

among its latest triumphs; and many disgraceful failures, arising principally from an obstinate ignorance of the rudiments of geology, have occurred in almost every district of England. The most sagacious practical miner may be misled by prejudice and false experience. Such were the circumstances which long locked up the profitable copper mines east of Truro, and which persisted, in spite alike of analogical and geological reasonings (now happily confirmed), in denying the existence of copper in many of the granite districts of Cornwall, or of lead ore under the trap formation of Derbyshire. Science will always give back a tenfold harvest to those who really sow her fields.

This elaborate and argumentative essay concludes by calling attention to the competition which many of the mines of Britain may have to encounter with the metalliferous produce of foreign countries; and how important, therefore, it is that the spirit of mining should be preserved from decay by wise precautions, and by all the aid which art and science can bring to its assistance. There are cool-headed economists who now predict the period when British mines shall cease to yield their fruits: we may not believe such unfriendly prophets, but a great responsibility rests on British statesmen, who do not do all in their power to protect this great inheritance of their country. There is no gigantic vegetation in our island capable of present compression into beds of coal, nor can we dream, like the chemists of old, that metals are growing while mortals sleep; but we can at least exonerate ourselves from the scandal which we have too long incurred, of exploring all the realms of earth except those beneath our feet, and of registering the most minute events at the surface, but neglecting those of surpassing interest beneath, which no memory can afterwards supply.

ON THE PREVENTION OF ACCIDENTS IN COAL MINES.

In our last Number we inserted some remarks on the report of the Select Committee of the House of Lords, appointed to enquire into the best means of preventing the occurrence of dangerous accidents in coal mines; and we now proceed to give some extracts of the evidence adduced during the sittings of the committee. Lord Wharncliffe was chosen chairman, and the first witness called was Sir H. T. De la Beche, who stated his conclusions to be that, from the different circumstances attending the collieries in different districts, they required different means to guard against accidents with any prospects of success. It is obvious that a bed which is flat, and worked by a pit, is differently circumstanced to one which is inclined, or nearly vertical, and which may be got at through the side of a hill by a level. He continued:—

The various engineering arrangements required are very different, and therefore, any general plan which may be very good for one district is not necessarily good for the others. In my opinion, therein consist the discrepancies which have appeared as to what may be good or what may be bad; for persons who have been accustomed to only one district have been too apt to carry their views to others to which they were not applicable; therefore it was that we suggested that properly qualified persons should be appointed to the various districts, who should use considerable discretion in the mode of recommending what should be done in different collieries, not employing compulsory powers, none being given them by which they could act hostilely, but simply by advice. And my general view has been, although I believe not stated there, but derived from subsequent experience, that in the present state of public opinion advice would be preferable to any other mode of proceeding, and that having seen any collieries which were not in a good state of ventilation, and, therefore, dangerous for the workmen, the inspectors should advise the parties respecting their condition; thus, subsequently, if accidents did happen, the coroners' juries would have to decide between the inspectors and the owners with regard to such accidents, and come to some fair and just conclusions, the result being, it was anticipated, that the public would be extremely benefited, and in a mode consonant with existing English feeling on the subject.

The causes of the different accidents he ascribed to—

Imperfect ventilation, and also fool-hardiness on the part of the men engaged; it having been ascertained that in certain mines, which were fairly conducted, the men were overdaring, and entered into what are commonly called the goaves or wastes, when it was dangerous and improper to do so. In the case of Risca, it appeared probable, although there were certain defects of ventilation, that the explosion was attributable to a man having entered improperly into a gob or goaf with a lighted candle. The same thing occurred at Ardsley Main. Very imperfect police, as regards the mine, is to be found in many collieries.

In speaking of the causes of deficient ventilation, he says, to a great extent it is attributable to ignorance, and not wilful neglect, as he had known large sums expended without attaining the end in view, although—

In some cases it might be attended with such increase of cost as, perhaps, not to render the mine worth working at the moment; but still, the hazardous manner in which so many collieries are now worked, and the little care that is taken of the ventilation in them, is very unjustifiable; I have been in situations myself when our lamps have got red hot in a very short time, from bad air. I apprehend that, as a whole, the engineering difficulties are extremely limited, as compared with the power of obtaining a general good system of ventilation, always, of course, taking into account the variations that would be needful in different districts, according to circumstances.

In reply to the question as to what districts the most ill-regulated collieries were situated in, he says:—

Some of the worst, at the present moment, are in South Wales; some of them, I think, are as bad as they can well be. At the same time, there are some excellently managed in that district, and it is one which contributes about six millions of tons of coals per annum. In the chief iron-works they are, for the most part, well-managed; and others are to be, here and there, found elsewhere. There are ill-conducted mines in Staffordshire, and also many in North Wales, Shropshire, and Lancashire; also in Gloucestershire, and in Somersetshire. With respect to some parts of Yorkshire, I need only appeal to the two Barnsley cases. I would likewise include parts of Derbyshire. When we get more northerly, to the Cumberland district, and to Durham and Northumberland, certainly things are greatly improved; but again, in parts of Scotland they are very defective. I think you will find that even in some parts of Staffordshire, the up-cast and the down-cast shafts are not in a state to produce perfect ventilation, from the want of the proper heat in the up-cast shafts.

The witness further proceeded to show that the state of many mines become much neglected after the men have left work, partly owing to the ignorance of the overmen; that it often happens when the men go into their stalls, or whatever the face of the work may be, they find much fire-damp, and proceed in a very primitive, but not ineffective, way to get rid of it. They take off their jackets, and brush away the vapour into the main courses of air. Similar to military and naval tactics, there ought to be in the police of a mine, officers to see that others did their duty; but the charge of inspecting collieries is too often left to one or two men, who may or may not go through them in a proper manner. The case of Risca was here alluded to, which happened after a Monday holiday, and although they said the night fireman and his party had gone round and looked well about, it was quite clear they had done no such thing; they had merely passed along the airways, and neglected the stalls. It was shown that the smaller collieries were generally in a worse state than the larger ones. In these it rarely happens that more than two or three persons are burned or killed at one time; this is only reported in the neighbourhood, nor is it much thought of there. The coroners never keep proper accounts of these accidents, and, in very many cases, no inquests are held at all. Where 70 persons are swept off, it causes general attention; but it is different where there are only two or three; many who get maimed go upon the parish, and are never more heard of. Sir H. T. De la Beche, in his further evidence, described the various safety-lamps, and Mr. Goldsworthy Gurney's plan, by high-pressure steam, for extinguishing Mr. Darlington's coal mine on fire.

Mr. Seymour Tremenheere was next examined, but whose evidence being entirely founded on his previous reports, given in our columns, we proceed to that of—

Goldsworthy Gurney, Esq., who described his experiments, with high-pressure steam, at Seaton Delaval Colliery, and for extinguishing the fire at Mr. Darlington's Astley Colliery, which we have previously described. In the former, previously to using the steam, there were 53,000 cubic feet of air coursing through the mine per minute, and, after applying it, the current rose to 80,000 feet per minute; and Mr. Forster, the viewer, in a letter to the inventor, says, "To myself this experiment affords the greatest satisfaction, as, before the apparatus was erected, carburetted hydrogen was occasionally seen on the edge of the goaves, but since, it had entirely disappeared." In answer to interrogatories, Mr. Gurney stated that he had no patent—no pecuniary interest in the matter; he gave it up to the public, with an anxiety to save life, and to advance the interest of all, mixed with some feeling of personal merit.

On further examination, Mr. Gurney recommended the use of several simple instruments—one a modified Aneroid, invented by himself, called the Miner's Aneroid, the windmill anemometer, and the disc balance of Sir George Cayley, which constantly and properly in use, would be found sufficient to show the state of every mine under all ordinary circumstances.

Dr. Lyon Playfair, on being asked if he thought the furnace at the up-cast shaft the best mode of ventilation, said—

I do not think it is the best mode that can be employed for ventilating a coal mine, and for this reason, that it does not enable the quantities of air entering into the mine to be varied according to special requirements. I will explain my meaning—the quantity of gases or fire-damp issuing from coal into the mine vary very much, according to the barometrical pressure; when the state of the barometer is low, there is a considerably greater quantity of gas escaping into the mine than when the pressure is high; there is no means in the furnace ventilation of adjusting the supply of air—for example, of causing a much greater circulation of air when required by particular circumstances; whereas, by a mechanical ventilation, a greater supply of air is commanded in the conditions where it is required.

On being asked his opinion of the possibility of establishing a Government inspection, he says—

My own experience, so far as it has gone, is, that there would be no objection on the part of the coal districts as a whole. I might show it in this way—I have been employed by the Government to make inspections of mines, and to report upon certain explosions, whether they were from particular causes or otherwise. I have never found the slightest obstruction in my inquiries; so much the contrary, that when I have been in districts making the inquiries for the report presented to Parliament, I have been invited by the neighbouring coalowners for many miles round to go and visit their collieries; they have given the greatest facilities, and I never in one case was refused when I applied to be allowed to descend a mine.

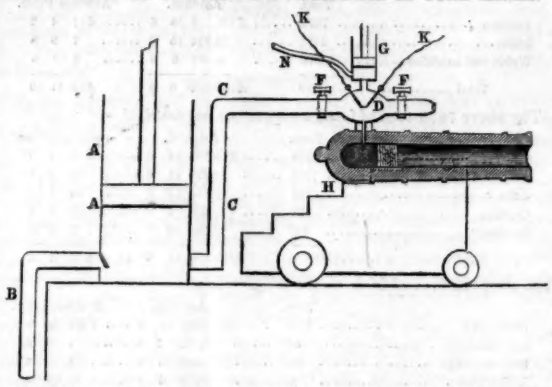
I think that the inspection should be a compulsory power of inspection; that the inspector should have the same power of entering into a mine as the inspector of factories has now of entering into a factory; that he should have power to see the working drawings, and to descend the mine, and see (which is a very important thing) that the working drawings really correspond with the true workings, which is not always the case; that after having done this, he should be able to give his opinion as to whether that mine was worked under conditions favourable to the safety of the mine.

He further considered it absolutely necessary that the inspectors should be well acquainted with the colliery, be men of acknowledged probity of character, and they would be well received. A system of inspection, which left it optional to all coalowners to admit inspectors or not as they pleased, would entirely fail.

[To be continued in next week's Mining Journal.]

Original Correspondence.

NEW MODE OF PREVENTING ACCIDENTS IN COAL MINES.



"Accidents have become, of late years, more frequent and more fatal, and most proprietors are convinced of the necessity of legislative interference."—*Extract from the current number of the Edinburgh Review.*

SIR,—The recently published report of the Lords Committee upon the subject of accidents in coal mines, has furnished (as might have been expected) a valuable mass of information, relative to the causes, and the extent of these terrible and ever recurring calamities. The only two methods of protection which the working collier has yet received from the hands of science, though excellent in theory, are but partially effective in practice. The Davy-lamp, with all the improvements it has experienced since the period of its illustrious inventor, has, doubtless, been of immense benefit in many instances; but it has, nevertheless, produced much unquestionable evil. The defence which it offers against explosion has led, of late years, to the opening of many collieries, which could not previously be worked; but, on the other hand, it has too frequently given a feeling of confidence and false security to the miners, and has thus operated in producing many dreadful accidents. And so, again, with regard to the various and powerful systems of ventilation adopted in the different mines—by the draft of a furnace in the upcast-shaft, by the use of blowing and exhausting cylinders, by the fan-blast of Brunton, by the refrigerating power of the waterfall, and the more recent introduction, by Mr. Goldsworthy Gurney, of a blast of high-pressure steam (the *vis a tergo* of which is found so pre-eminently effective as a ventilating agent), the benefit is but partial; for it appears that, notwithstanding the combined use of all these powerful appliances, there is an unquestionable *increase* in the number of accidents resulting from explosion. It would, perhaps, be difficult to say with certainty to what cause this increase is attributable; but it appears to me to result in a great measure from the circumstance that the miner is in a state of constant ignorance as to the true and specific degree of danger belonging to the atmosphere by which he is surrounded.

The arrangement figured at the head of this letter is intended to supply the deficiency in question, and not in any way to interfere with the due operation of those precautionary measures which are already in existence. It is based upon unerring chemical and electrical principles, and is perfectly simple in management; and though it does not pretend to guard against casual blowers, to which all mines are subject, and which will suddenly burst forth, and fill those localities of the pit which are immediately adjacent with an explosive mixture, yet it will always, at intervals of an hour, half an hour, or as often as may be desired, afford a positive indication of the existence of danger, so far as the general atmosphere of the mine is concerned. Its construction is mainly grounded upon the known principle, that different mixtures of fire-damp with atmospheric air exhibit different properties when brought into contact with flame, and these several properties it may here be as well to recapitulate.

1. One measure of fire-damp, when mixed with three of atmospheric air, is non-explosive.

2. One of fire-damp to five or six of atmospheric air gives a slight explosion on the application of flame.

3. One volume of the gas to 7 or 8 of air, produces a violent explosion.

4. One volume of fire-damp to 14 volumes of air gives rise to a feeble flash; and when the proportion of air to gas is greater than 15 to 1, no flash takes place; but the flame of the oil lamp in an improved "safety," will be seen to become *enlarged* when placed in the mixture.

It appears then, for instance, that if one volume of fire-damp be thrown into 20 volumes of ordinary atmospheric air, the mixture is non-explosive; *but it will be at once obvious, that if the air to which this one volume of fire-damp is added, should happen to be charged with a very small quantity of inflammable gas,* the explosive proportion of 1 in 14 will be reached or exceeded; and detonation will take place on the contact of flame, or any strongly-ignited body.

The *modus operandi* of the mechanism figured above will, therefore, be readily understood; and I may here observe that it may be rendered self-acting, or not, as desirable.

A, A, represents a single-acting air-pump; B, a pipe—one end of which communicates with the induction valve of the pump, A; the other end is open, and allowed to hang some distance down the upcast-shaft of the mine. C, C, is a pipe, leading from the eduction valve of the air-pump to a strong and close metallic vessel, D, furnished with two stop-cocks, F, F. The total capacity of D is equal to 20 cubic inches—(this is not absolutely necessary; but is here assumed to facilitate explanation.) G is a small single-acting gas-pump, communicating with D and N by two valves, and having a capacity of one cubic inch. K, K, are two wires, leading to the poles of a galvanic battery; these wires enter the vessel, D, through insulating ivory collars; and within this vessel they communicate with the ends of a very fine wire of platina. H is a cannon, charged with sufficiency of powder to make a loud report. The whole arrangement is placed some 50 ft. from the mouth of the upcast-shaft, and properly protected from the weather. If intended to be self-acting, it is connected with the steam-engine by any convenient means.

Its action is as follows:—The pump, G, is at rest; the stop-cocks are open, and the pump, A, is in constant action, drawing a small portion of the air from the upcast-shaft, by means of the pipe B, and blowing it, by means of C, through the metallic vessel, D. Suppose, at the end of an hour it is required to test the atmosphere of a mine, the stop-cocks are closed, and the pump, A, brought to rest. The small pump, G, which communicates through the flexible tube, N, with a bag, or bladder, *containing fire-damp* (hydrogen or coal-gas, in different proportion, will answer the same purpose) is caused to give one stroke; by this stroke one cubic inch of gas is thrown into the vessel, D. The battery circuit is then completed, and the fine platina wire brought to a white heat. If the air in D, *which is a sample of that in the mine,* was tolerably pure before the addition of the cubic inch of fire-damp, no explosion will take place, for 1 volume in 20 is non-explosive, as before stated; but if it previously contained but the 1-40th of inflammable gas, the ratio of 1 in 20 is altered to that of 1 in 13½, a flash will therefore occur, and communicating with the priming of the cannon, fire the charge, and thus give notice by a loud report of the approach of danger.

It is very easy to regulate the mechanism, so that any other proportion of fire-damp in the mine will produce this warning result upon the surface of the pit; but I have selected the proportion above given, because it appears to be a settled point among practical men, that inflammable gas should never be allowed to accumulate, even in the recesses of mines, to the extent of 1 in 30. The battery for firing the mixture may be a Smee's, of good size, but weakly charged. It would then continue in action for a long period of time, as the contact for producing ignition would not require to be maintained more than a few seconds. If the use of a cannon should be considered too expensive for the above purpose, a small maroon mortar may be substituted. In this case it will be necessary, as an additional protection against the weather, to tie tightly over the mouth of the mortar a piece of oiled paper. I have repeatedly fired maroons by means of voltaic electricity, and I, therefore, know it to be sufficiently easy. A ¼-lb. maroon may be obtained for 1s., and an iron mortar for 2s. or 3s. more. But the principle here described is susceptible of many modifications; and I feel convinced that its adoption will be attended with beneficial results in the saving of human life.—ISHAM BAGGS: *Jan.* 11.

VOLTAIC COPPER ASSAY,

SIR,—There was, 10 or more years since, in the *Mining Journal* a letter from Mr. Martin J. Roberts, on the assay of copper by voltaic action, pointing out its advantages over the common wet assay. The results I did not then find so perfect as I anticipated, perhaps from some difference in the details of manipulation; but should be glad, now, to resume it, if he, or any one who has followed it up since, will favour us, through your columns, with the details, to ensure exactness.

The usual methods are not quite precise enough for my present purpose. The common wet assay, with iron and muriatic or sulphuric acid, is discredited for exact analysis as inconstant, giving too much, unless great care is taken to prevent oxidation and other contamination, and too little when this is completely prevented. On the other hand, the oxide, the form in which it is usually estimated, often gives too much, carrying down minute portions of other oxides, which it retains through our methods of separation. And Mr. Levol's method of solution in ammonia, and reduction to suboxide, also gives too much (at least in my experience). The differences are not great, and a mean of the three may come very close to the truth; but this "balance of errors" is not a fully satisfactory determination. The voltaic method gave the copper in a clear sheet, easy to clean, dry, and weigh; but did not, in any of my experiments, give the *whole* of it, however long continued. If Mr. Roberts, or any of his followers, has attained this desideratum of his process, so that we can re-dissolve and re-precipitate a given weight of pure copper half-a-dozen times, without an ultimate loss of more than ½ per cent., or impairing the quality of the metal, he will supply an important desideratum in copper analysis, in giving us the details needful to ensure success.

Jan. 16. J. PRIDEAUX.

MINING IN IRELAND—THE BANTRY SILVER-LEAD MINES.

SIR,—Having seen a letter in your valuable and interesting Journal, dated 27th Dec., signed "Gurtavalligite," in reply to a "Cornishman," Bantry, whose letter I have not had the good fortune to see, and as allusions were made by "Gurtavalligite" to the Bantry Silver-Lead Mines, the setts of which I obtained in June, 1849, consequently it might be very justly inferred by the mining community that I was the author of "Cornishman's" letter. Should such opinions be entertained, I beg, through the medium of your paper, to assert that I am neither the author, or writer, of "Cornishman's" production.

I consider I am in duty bound to make these remarks, not only in justice to myself, but as a warning to those whose inexperience in mining generally would not, perhaps, warrant them to risk an opinion on such matters. It would be better taste, in my opinion, if less was said, and more done, towards developing the mineral resources of the south-west portion of the County Cork, no matter whether the capital be English or Irish, for an Irish pound is as good as an English pound any day of the week, and will accomplish as much work if properly applied. For one, I should be very glad to see less acrimonious letters in reference to mines and mining; they can never do any good, but are, no doubt, calculated to do a great amount of harm. Perhaps "Gurtavalligite" is very just and true in many of his remarks! HENRY THOMAS.

Dhurode Mine, County Cork, Jan. 14.

IRON AND CARBON.

SIR,—I entered upon the discussion relating to the constitution and properties of bar-iron with much diffidence; because, although I had given the subject deep study, and various circumstances have led me to the conclusions I had formed to myself, I expected, when my views were submitted to the consideration of more experienced iron manufacturers, some startling facts, which I had overlooked, or incontrovertible arguments, would have been brought forward to set these aside. I feel bound, in candour, to state that nothing of the kind has yet appeared. Assertions are made that I am in the wrong; my ideas are termed strange, unaccountable, and absurd, simply because they are new, and opposed to the generally received opinions. Whatever actual argument has been brought forward appears to me to favour my views, rather than otherwise. I am not wishing to establish a new theory, but, aiming at the accomplishment of a project of great value and importance, I felt anxious to be set right if I had taken erroneous views of the principles upon which it was founded. My views remain unaltered; and I now feel greater confidence in replying to my opponents. I cannot conceive what Mr. Mushet's motive is in re-iterating the remark, that I surrender my theory when I say that the presence of cinder is objectionable in certain articles of iron, when in a finished state, ready for permanent use. Every article of iron would be better if formed of the pure metal, but the difficulty would be in forming it; hence the advantage of an intimate admixture of cinder to facilitate the working. Mr. Mushet is by far too acute an observer not to understand my meaning; but, as others may not, I will endeavour to illustrate it by another substance. Merchant bar-iron is no more a finished article than a piece of leather is a boot. Let us suppose that some one had contrived a process for rendering leather, while still retaining its pliability, proof against any sharp instrument—a most valuable property in the leather of a finished boot for this district, where the sharp edges of the copper slag and glassy cinder from blast furnaces, used for repairing the roads, play sad havoc with boots and shoes. This would be a great advantage in the finished article; but how could the poor cobbler get the leather cut up and stitched? he must have some means of altering the property of the leather before he could get his work done. So it is with iron and the smith; give him pure metallic iron, and he must re-forge it in his smithey, by making cinder on the surface, and working it into the pure metal, before he can twist and turn it into all the requisite forms. The great and only advantage of having cinder in merchant bar-iron is to save the smith all this trouble; while I must repeat a former remark, that a difference in the constitution of the cinder occasions the varieties of quality in bar-iron. I beg to assure Mr. Mushet that what I am aiming at is not an impossibility. Taking Mr. Mushet's own position, that a puddled ball is altogether pure iron, when the particles are brought into close contact, no matter whether by the hammer or squeezer, as I regard the rolls in effect as that of a powerful press, the mass should possess the same ductility throughout, and, drawn into a bar, would exhibit a smooth homogeneous structure, or one solid fibre. A lump of copper drawn out into a bolt will not split up the middle, and show fibres the same as a piece of merchant bar-iron. I have not seen a bloom of good tin-plate iron drawn into a bolt, but conceive that it would be similar to copper. I have cut a piece off the thick plate into which such iron is first drawn, and could not get it to split, or exhibit fibres. I have had frequent conversations with intelligent roller men, who have generally agreed with me as to the mixture of cinder in bar-iron. They recommend the leaving of plenty of cinder in the iron; it makes the iron work smooth and kindly through the rolls; they know it by the feel, as the bar passes through the rolls; and they say in the finished bar it makes the fibres show more clear and distinct. When some bar-iron is split up the middle, the fibres do certainly show as plain as the threads in a hank of yarn, only the latter are loose while the former are cemented together. I cannot see in what way the presence of fibres throughout the entire mass of a thick bar of iron can be satisfactorily accounted for, otherwise than by the working together of iron in two distinct and different states. In wire, the appearance of irregular fibres may be accounted for by difference of temperature—the partially cooled surface being pressed into the hotter portion of the interior mass. I cannot be reconciled to the idea that the atmosphere of a puddling

furnace contains any notable quantity of carbonic acid, so long as either smoke or flame issues from the chimney, and this is generally the case, except when the door is open. The best coal for puddling iron contains a large proportion of carbon, rendered volatile by its union with hydrogen, and it is this which furnishes carbon to the atmosphere of the furnace. I have never seen the bridge of a puddling furnace loaded with coke, but have seen something tantamount to it—that is, the use of red ore and ground coke, in excess, applied to puddling pig-iron. I have noticed the small particles of coke remaining unconsumed during the whole operation, and come out at last floating on the cinder when tapped off. I have seen sawdust used in the same way, with a similar result. Let Mr. Mushet puddle iron in an atmosphere of carbonic acid, as I have done, when blowing air over the fire to consume the gases entirely, and he will find his iron in a pretty mess, and be ready to admit the propriety of adding carbon to oxide.

Mr. Mushet's observations on cinder are very valuable, and extremely interesting to me, for which I beg to tender him my sincere thanks. The preceding remarks of mine have been written in great haste; if I have used too much freedom, Mr. Mushet must be kind enough to attribute it to impetuosity and thoughtlessness, rather than to disrespect.

Jan. 14 ——— T. H. LEIGHTON.

CHEMICAL STRUCTURE OF IRON.

SIR,—Some remarks of "Wootz's," in the *Mining Journal*, of the 5th inst., require a brief reply. Particles of perfectly pure iron adhere together, when kept for some time at a high heat, by a sort of cementation, forming a smooth uniform undivided mass of pure metal, and this, drawn into a bar or bolt, would be what I term one solid fibre of iron, in contradistinction to a piece of ordinary merchant bar-iron; but this cohesion of the particles of iron does not come up exactly to the commonly-received notion of welding, which is, that when two pieces of iron, drawn from a hot fire, are brought into contact, they stick together, which perfectly pure iron would not do, unless coated with a fusible cinder, as I have beforementioned. I am satisfied that cast-metal from the blast-furnace may be brought to the pure metallic state, by a very simple mode of treatment, ready to be drawn out into railway bars, the tires and axles of railway carriage wheels, sheets, &c., free from fibre, grains, or crystals, and dispensing with the refining, puddling, and re-heating, or ball furnaces.

I am obliged to "Wootz" for his interesting remarks on the state of cinder from the blast-furnace, which tend to confirm the notion I have for some time entertained on the subject of vitrification, or the transparency of a mixture of opaque bodies. This depends upon a high state of oxidation. I will state a circumstance which occurred many years ago, and the deductions I have drawn from it, without apology, as it leads me to an explanation of the principles I propose for smelting sulphuret of copper—a subject, I imagine, of more interest to a large class of the readers of the *Mining Journal* than that relating to the treatment and properties of iron. On the occasion of one of my first attempts to introduce British artificial alkali for the manufacture of glass, I was watching the effect of a mixture of pure alkaline salt and magnesian limestone for crown glass, while a workman was taking out portions of the metal for trial, when I heard a gentlemen, who had the superintendence of the establishment, ask if it was ambitty, to which the other replied that it was. Being a novice myself in the art, this was all new to me, The gentlemen then pointed out to me what he meant, which was a number of white opaque spots in the glass. He told me he could not account for it, but that he found it invariably the case when any considerable proportion of lime was used in the mixture. I gave the subject, at the time, very close attention, and noticed that these opaque specks came off from the point of contact of the iron tube used for gathering up and blowing out the metal. Galvanic action would have been a convenient mode of accounting for this; but at that time (nearly a quarter of a century ago) electricity was not so familiarly treated as it is now-a-days. It immediately occurred to me that the iron must either abstract oxygen from the metal, or impart some to it.

Various circumstances have, from time to time, recalled my attention to the subject, until I have arrived at the conclusion, that pure iron at a high heat withdraws oxygen from lime, reducing it to the metallic state of calcium, and this taking place in a mixture to form glass, destroys its transparency. I have for many years studied the art of copper smelting, my attention having been first directed to it with the view of recovering the sulphur now wasted, and causing such a nuisance round about copper works. Finding that any complicated or troublesome process would be objected to by the established smelting firms, I have lately advocated a mode of retaining the sulphur in the refuse, by adding some cheap material to the sulphuret, having a stronger attraction for sulphur than copper has. Granulated metallic iron may be cheaply prepared from several of the rich ores, as I have stated in a former letter. To smelt sulphuret of copper, I propose to add the requisite proportion of iron, with an excess of carbon and lime. I have contrived a furnace, with arrangements for continuous feeding, the unfused material to rest upon a solid hearth, having a flue or drain passing into another compartment—so that the fused matter may immediately run off from the unfused, and pass into a large deep reservoir, kept at a high heat by a separate fire.

On fusion taking place, the iron will abstract oxygen from the lime, at the same time taking up a portion of carbon, thus forming a fusible cinder, or proto-carburet of iron (I will not offend the fastidious ears of the chemist by calling it carbo-oxide), the calcium and sulphur will at the same time unite into a sulphuret. The two compounds, proto-carburet of iron and sulphuret of calcium, will be fluxes sufficient for any earthy matter present. In the deep reservoir the copper will settle to the bottom, and may be tapped off from time to time, while the lightest of the slag is kept flowing off from the highest point. Copper could be thus produced, by a single fusion, in a state of greater purity than it is by the old process, after seven or eight operations, while the slag or refuse would be in a state to yield several valuable products by judicious treatment. This is a subject worthy the serious attention of your Cornish friends, more especially if they seriously contemplate the formation of a British smelting association.—T. H. LEIGHTON: *Jan.* 12.

FIBRE IN IRON.

SIR,—The details lately before the public on the manufacture of gun-barrels furnish an apt further illustration of my remarks on the fibre of iron. When malleable iron is fused with small portions of carbon it loses entirely its crystalline fracture, and assumes the peculiar fracture of cast-steel, the densest form in which iron is known. The fine minute grains of the section indicate that the particles lie in the closest and most intimate contact. It is, therefore, evident, if the carbon is removed from this substance, so as to restore its tenacity, an iron is obtained more perfectly consistent and uniform in its fibre than that resulting from the ordinary processes, or from forging (which it is difficult to do) the crystalline bulk of cast malleable iron. By repeatedly working this cast-steel for the purposes of the gunmaker, the greater portion of the carbon is dissipated, and a result obtained combining the *fibrous tenacity* of soft iron with the *dense structure* of cast-steel. Could such a structure be imparted at an available economy to railway bars, it would be the best preservative against those shreds and tatters which rails now present after some time of use. In truth, iron has never before been subjected to the peculiar hardship of this position, and it must take time to suit the manufacture fully to its wants. The shreds which are torn off, though preserving in the interior a metallic brightness are as fragile as scales of mere oxide. In truth, what can *permanently* stand the action of the breaks, producing streams of ignited iron behind either wheel? It is very satisfactory to read, this week, in your Journal, a practical common-sense letter on fibre, after the late attempts to mystify it as something that could not be understood, and reserving the very privilege of puzzling themselves over it to an initiated elect.

If Mr. Carter has fully established to his own satisfaction, by ample experiment, that so slight a vibration as burnishing at right angles to the fibre will uniformly destroy the tenacity of iron, he has advanced a point of great importance towards deciding the controversy on the existence of such a change. The two main instances adduced by Mr. Stephenson to disprove the alleged alteration were the connecting-rods of locomotives, and the rods of heavy pumping engines, remaining unchanged under prolonged and enormous strains. But, in both these instances, the strain is in the *direction of the fibre*. In all marked instances of the *apparent* change which have come under my own notice, the strain has been (as in hooks and couplings) at *right angles* to the *fibre*. I am no advocate for calling in imaginary electric currents to pass the mind over difficulties requiring some pains to be understood, and the *formation* of fibre is so plainly mechanical that it is unnecessary to seek further for its explanation. But some facts lately noticed by your correspondent, Dr. Murray, respecting other metals, imply the *possibility* that this agent may, in some circumstances, impair tenacity in iron also. How else can the slight vibration adduced by Mr. Carter produce any effect? It places tenacity on a very slender footing, and it would require a wide basis of experiment on every species of iron before asserting that such cause and effect are constant.

In the present extended use of iron, nothing more important can be investigated; and the stand taken by Mr. Stephenson against a hitherto-received notion is the surest step to get the subject thoroughly investigated. The Britannia tubes will, in a few years, bring a great experiment to bear upon the point, for they will be subject to every direction of vibrating force—*we must hope they will not "crystallize."* Query, does the discharge of fire-arms produce such a lateral vibration as coincides with Mr. Carter's view of burnishing across the fibres? It strikes me, if the effect he alleges were *constant* upon *all* iron, the rubbing of one journey ought to "crystallize" highly all the axles of a whole train.—DAVID MUSHET: *Jan.* 14.

VENTILATION, &c.

SIR,—I hope I have already been sufficiently plain and explicit in giving my sentiments and opinion on the subject of ventilation.

Cold air is entering a warm room from every source through which it can effect an entrance—chinks, cracks, and crevices in windows, and the door way; and, above all, is an entrance effected by *the descent of cold air by the chimney*, when the grate is unsupplied with *fuel yielding flame*. In the door way, when it is entirely open, there will be found, when there is a fire in the grate, a current of air inwards, at the threshold; while above there is one outwards, the intermediate stratum being stationary. When a current of air enters an apartment under the circumstances already stated, there must needs be a corresponding displacement; but the cold air will cool and condense the warmer and rarer portions of the atmosphere, and the surplus, when the equilibrium is adjusted, will escape where there is the least resistance opposed to its exit.

There is a phenomenon which invests all *flame* with a highly interesting and important character. It is this—By an inviolable statical law, flame ascends, and this ascensional position is irreversibly maintained. It follows that bituminous coal, or other fuel, as that of dry wood, should invariably be burned in the grates of sleeping and sitting rooms, until the chimney *becomes heated* by the ascending flame; this, and this only, will promote currents upward, and the ascent of the products of combustion—viz., carbonic oxide, carbonic acid gas, &c.

It will follow from these premises, that nothing can be more dangerous or destructive to health and life than to burn charcoal, coke, or anthracite (stone coal), in any apartment—above all, in the grate in the bed room; because, as there is no flame, the space above can be no more heated than that below and around; the consequence is, that the deleterious products of combustion will be, by the descent of the cold air down the chimney, dispersed into the atmosphere of the room, and act as *narcotic poisons* on the brain. Precisely the same thing supervenes and arises from the perilous practice of throwing live embers, merely red hot, into the cold grate of the sleeping room. The chances are all against the hapless inmate or inmates surviving the eventful night. What marvel that, under such circumstances, apoplexy is so rife, and fatal issues are so frequent! There are individuals who might scruple to use a pan, or a brazier, with ignited coke or charcoal, or red hot embers, under such circumstances, and yet would unhesitatingly employ them in the *open grate*; while the truth is, the one is just as dangerous as the other. Cases are of such frequent occurrence, as to be patent to all. That at Penrith, and the more recent one at Nottingham, speak volumes, and emphatically attest the force of these palpable truths. More might be said, if more were necessary. J. MURRAY.

Portland-place, Hull, Jan. 10. ———

VENTILATION OF RAILWAY CARRIAGES.

SIR,—There is no ventilation, properly so called, in railway carriages; and yet nothing can be more simple and easy than to effect in them a thorough and complete process of ventilation. There are, indeed, on all sides, screens of perforated zinc, or overlapping bars, in the manner of Venetian blinds—these, however, only admit *cold air*, and form currents which give rise to catarrhal affections, or aggravate the indisposition of invalids. *A central lamp*, immediately over the roof, to which the ascending impure air has *free and unrestrained access*, is the entire desideratum. In this case, the expired air tends to the source of heat, and is there ejected; the lamp might serve also the double purpose of giving light in traversing tunnels, and at night, as well as act as a ventilator. At present, where lamps are occasionally used to yield light, they are confined in a hemisphere of glass, to which the air of the railway carriage can have no possible access, as if parties were desirous of stifling ventilation altogether.

Portland-place, Hull, Jan. 14. ——— J. MURRAY.

THE ELECTRIC TELEGRAPH.

SIR,—In a former hurried communication, in reference to the electric telegraph, I adventured the opinion that the time would come when the wires which transmit the electricity must traverse the *earth*, instead of the air. The false alarums rung on the bell in a high electric condition of the atmosphere; the difficulty of communication when the wires pass through tunnels, as between Leeds and Skipton, where a weakly-charged battery is altogether insufficient for the purpose; and superadd to these the destructive effects which may be entailed by the thunder-storm, whereby the whole means of communication may be instantly destroyed; and there is palpable proof of the imperative necessity for such a change—namely, from air to earth. The other day I witnessed the effect of the lightning in the *entire fusion* of the wire which united the mechanism of the alarum bell. At the telegraphic station, moreover, at Bradford, Yorkshire, the *woodwork* was set on fire. Now, these casualties may happen at a moment when a message of pre-eminent importance has to be transmitted. Great confusion, also, often takes place when telegraphic wires at junction intersections cross and interfere with either, and which casual contacts may likewise be produced by the force of winds. All these casualties and incidents may be avoided by laying terra cotta pipes in the earth, and having the telegraphic wires to pass through them. It is surprising that the voltaic batteries used at telegraphic stations should be the simple arrangements of a series—the *very earliest form* used. Of course, the electric power required here must spring from the multiplication of the series, without any reference to size. I infinitely prefer Brett and Little's "converser," from its elegance and simplicity, and its *toute ensemble* arrangements, to all those hitherto used. The complication of wires on the old system must be most annoying and perplexing. On some lines I have counted *twelve* parallel telegraphic wires, when a *mere fraction* of the number might well suffice. I can see no "let or hinderance" to the complete success of Brett, Toché, and Co.'s submarine telegraphic communication, if copper (annealed) wire, covered with gutta percha, and coated with bitumen or pitch, be used, as I proposed sometime ago; and they will do well to ponder the probable *brittleness* produced by coating iron with zinc, which I submitted for consideration in a former Number of the *Mining Journal*.

In ruminating on the subject of telegraphic communication, the question has recurred to my mind—WILL THE TIME EVER COME WHEN ATMOSPERICAL ELECTRICITY SHALL BE ENLISTED INTO THE SERVICE, AND ELECTRICAL BATTERIES BE ENTIRELY SUPERSEDED? I confess I think so.

Portland-place, Hull, Jan. 14. ——— J. MURRAY.

THE ANEROID BAROMETER.

SIR,—As a rejoinder to the remarks of Mr. H. Negretti and his commentator may be expected, I have merely to say, in reference to the latter, that I am not aware that I have ever uttered one word in disparagement of the "mercurial barometer." Such an act would be sheer folly. Nor have I ever, in any case, advocated the "Aneroid" as a *perfect* instrument. Such an idea never crossed my mind, and common sense must discern that so preposterous an opinion could not be entertained. I hailed it as an elegant instrument in a portable form, and as yielding *approximate* results of great value, under circumstances where the mountain barometer was *not available* in any wise. In reference to the employment of the Aneroid barometer on shipboard, I counselled its adoption as a valuable *auxiliary* to, not a substitute for, the marine barometer and sympiesometer; on the same principle that the sympiesometer is a useful adjunct to the marine barometer. Besides, who does not know that Adie's sympiesometer is equivocal in its equilibria, under adventitious circumstances? I simply wished to enlist the Aneroid into good company, without undervaluing its associates in the ranks. I remember that, long before Mr. H. Negretti preferred the charge against the Aneroid, a complaint touching the absence of compensation for temperature was made by a writer, in a *brochure* which emanated from the Institution in Leicester-square; notwithstanding, I still hailed the introduction of the Aneroid as a boon, especially as an invaluable auxiliary to the Alpine traveller in the measurement of mountains. Every one knows the necessity of thermometric corrections in the case of the mountain barometer, and nothing more is wanted in the case of the Aneroid, which I must still assume is founded on *correct principles*, and I am now speaking in reference to a *well-constructed* machine. If Mr. H. Negretti had, like me, snapped his *Englefield*—a costly and brittle instrument—in traversing mountainous regions, by a false step and a fall, he would with me also have hailed the introduction of a portable and available instrument, and rejoiced in its indications, even were they only approximative. As to the *thermo-barometer*, incidentally mentioned by Mr. H. Negretti, I never saw it but once, at Mr. Jones's, Charing-cross; and I can only express my surprise at its being named in connection with the Aneroid.—J. MURRAY.

Portland-place, Hull, Jan. 14. ———

THE ANEROID BAROMETER.

SIR,—Mr. Birkmyre's letter upon the barometer, inserted in your Journal of last week, commences with a very palpable mistake. He says—"While I confess, with Mr. Negretti, that I also was rather surprised at Dr. Murray's remarks on the mercurial barometer," &c. Now, Dr. Murray made no special remarks apon the mercurial barometer—at least, no remarks that I should find fault with; indeed, Dr. Murray is a man of too much good sense to find fault with an instrument which, for the measurement of atmospheric pressure, stands pre-eminent in the estimation of the whole scientific world. It is true that I admit the value of the sympiesometer, and the many advantages it possesses in point of accuracy over the aneroid; but I never compared it for a moment with the mercurial barometer—therefore, your correspondent is again in error upon the subject. But the most extraordinary part of Mr. Birkmyre's letter is where he imagines that the very best mercurial barometers would be liable to the same errors as the aneroid, if subjected to the same experiments as those marked in my letter, 2 and 3. To this assertion I can only answer, that the most common mercurial barometer now constructed, would not be liable to anything like such an error; and, on some future occasion, I will enter more into detail, if required to do so; but this I hardly think likely, as the theory of the mercurial barometer is so well known to scientific men.

I believe I stated, in my former letter, that I could have wished some one else had taken up the present subject, for various reasons—the principal being that I might be thought an interested party. Mr. Birkmyre assures us that he is not actuated by any motives of interest as a barometer manufacturer—a statement to which I am bound to give implicit reliance, as, by the tenor of his letter, he evidently shows that he does not understand enough of the subject to undertake the construction of either one description of instrument or the other. HENRY NEGRETTI.

11, *Hatton Garden, Jan.* 16. ———

TIMBER TRACKS ON COMMON ROADS.

SIR,—Your able correspondent, Mr. Motley, has again introduced this subject to the notice of your numerous readers, and reiterated his confidence in its expediency and success. It would have been more satisfactory had some practical proofs been adduced in confirmation of the opinions given in its favour. There has been ample time for instituting experiments on a large scale, and as the scheme is merely the revival of an obsolete system, something more than mere opinions is requisite to induce a general belief in its expediency. Timber rails, or tracks, were extensively used in the counties of Durham and Northumberland for upwards of a century, and have now been universally abandoned, and iron rails substituted. The rail or waggon ways were also constructed after the fashion recommended by Mr. Motley, but have been superseded by lines reduced into as good working gradients as can be obtained at a moderate expense. It is but reasonable to presume, that these alterations were the results of the proved imperfections of the primitive systems, and experience has abundantly confirmed the wisdom of the change. With these well-known facts before us, it is difficult to entertain a favourable notion of a system so directly opposed to experience, and at such utter variance with our knowledge upon the subject. Mr. Motley must not, therefore, be surprised, if the promised advantages of his "timber tracks" be received with scepticism, until he proves, by unequivocal practical demonstration, that the experience of a century is valueless, and that the colliery owners of the north were blind to their own interests, in abandoning the wooden rails laid on the surface of the ground.

Had Mr. Motley ever seen, or rather superintended, the working of a timber or wooden railway, he would speak with much less confidence of the success of his scheme, and would scarcely venture even to imagine that he could travel on such a track at the rate of twelve miles an hour! The opinions of the writer in the *South Australian* paper, and of "the most eminent mail-coach contractor in the kingdom," quoted by Mr. Motley, tend rather to show the necessity there is for a full discussion of the merits of the scheme, than to prove anything in favour of it. That it has not received more notice from your correspondents, may be attributed to other reasons, than that of a general assent to Mr. Motley's propositions, or an universal approbation of his plans. As only a modified resuscitation of an obsolete system, which had been long tried and abandoned as an imperfect and inferior plan, it seemed not to require other arguments to disprove its expediency, than a mere allusion to its history; but as it has again been brought before your readers, it may, perhaps, be advisable to revert to the objections urged against it, and to inquire if there are any unequivocal data, deduced from practical experience, which can be alleged in its favour? On a satisfactory answer being given to this query, it may be worth while to enter a little more diffusively into the merits of the scheme, and discuss some other subjects connected with it, which are brought forward in Mr. Motley's communications, and upon which a contrariety of opinion may reasonably exist.—J. RICHARDSON, C.E.: *Neath, Jan.* 14.

ARSENIATE OF COPPER AS A PIGMENT.—The arseniate of copper is a substance possessing a very fine blue colour, and seems worthy of occupying a high place in the list of substances employed in water-colour painting; as it is permanent, of a rich and beautiful tint, and may be used under all circumstances in which water can be made the vehicle of its application. A communication on the subject of this colour has been lately presented by M. Rebouleau to the "Academie des Sciences." The following is the substance of this paper:—If a mixture of equal parts of arseniate of copper and neutral arseniate of potash be heated, it will undergo fusion, and form, upon cooling, a greenish-blue mass, transparent, very fusible, and having a vitreous fracture—this is the double arseniate of potash and copper. If, when the arseniates just mentioned are in a state of perfect fusion in a crucible, nitrate of potash (to the extent of one-fifth of the weight of the fused mixture) be projected into the fluid, in successive small quantities, there will arise a lively effervescence, with evolution of the deutoxide of nitrogen; and the crucible, when cold, will be found to contain a magnificently blue substance, consisting of the sub-arseniate of potash, and the arseniate of copper, in combination with each other, and mixed with nitrate of potash. When the compound, produced as above, is treated with water, the double salt is decomposed, the arseniate and nitrate of potash are dissolved out—the arseniate of copper, of a beautiful blue colour, remaining behind. In the production of the blue arseniate of copper, it appears that the change from the green colour of ordinary arseniate takes place at the moment when the nitrate of potash is added to the fused mixture in the crucible. Is not this, therefore, an indication that the oxide of copper itself has undergone some change? The chemical action is here somewhat obscure; but it is, doubtless, one of oxidation. It is evident that the potash is not the effective agent; for, if, after adding the nitrate to the mixed arseniates, the heating be long continued after the effervescence has ceased, the compound again takes its original bluish-green colour—a change which can only here be traced to the liberation, at an increased temperature, of the oxygen which had, in the early stage of the process, produced the characteristic fine blue colour. The question is then, as to the existence of an oxide of copper, containing a larger proportion of oxygen than that forming the base of the ordinary green salts of that metal. Combined with arsenic acid, the superoxide seems to be stable at common temperatures, but easily reducible to a lower degree by exposure to a red heat, allowing the excess of oxygen to escape in the free state. The double arseniate of potash and copper, when placed in contact with water, is decomposed, and, as has been already shown, the arseniate of copper may be isolated, on account of its insolubility; and, from its beautiful blue tint, it may be, no doubt, rendered extensively useful wherever water-colours can be employed.

BRONZE appears to have been among the most ancient of the manufactures of mixed metals. The earliest coins, statuettes, warlike weapons, and agricultural tools, were of bronze. It has been stated that the ancients were ignorant of brass, but this is now known not to be the case, for we have examples of combinations of copper and zinc, although it is quite certain that neither the Greeks nor the Romans knew of the latter metal in its pure state; the oxide of zinc, tutia, or calamine earth was known to them, and employed for making yellow metal.—*Art Journal.*

Proceedings of Public Companies.

MEETINGS DURING THE ENSUING WEEK.

MONDAY .....St. Katharine Dock Company—offices, at Twelve.
Union Bank of Australia—offices, at One.
London Conveyance Company—George and Vulture, at Twelve for One.
TUESDAY.....North Staffordshire Railway—London Tavern, at One.
FRIDAY .....Australian Agricultural Company—offices, at One.
English Widows' Fund and General Life Assurance—offices, Twelve.
SATURDAY ....Australian Trust Company—offices, at Twelve.
Belgian Eastern Junction Railway—London Tavern, at One.

[*The meetings of Mining Companies are inserted among the Mining Intelligence.*]

LONDON JOINT-STOCK BANK.

The half-yearly meeting of this company was held at the bank, Princes-street, City, on Thursday last, the 17th inst.

GEORGE SCHOLEFIELD, Esq., in the chair.

Mr. HEWETT (the secretary) then read the report, which stated that the amount of net profit realised by the bank, during the half-year ending 31st of December last, is 25,132*l.* 10s. 8d., which, with 15,433*l.* 14s. 1d., carried forward from June, makes a total of 40,566*l.* 4s. 9d., which is appropriated in the following manner:—18,000*l.* for a dividend, at the rate of 6 per cent. per annum; 22,500*l.* as a bonus of 7s. 6d. per share; and 66*l.* 4s. 9d. to the credit of the guarantee fund, now amounting to 132,723*l.* 3s. 8d. The dividend and bonus, free from income tax, will be payable on and after Friday, 25th inst.

LIABILITIES AND ASSETS—MONDAY, DECEMBER 31, 1849.

THE LONDON JOINT-STOCK BANK.

To capital paid up—viz., 60,000 shares, at 10*l.* each		£ 600,000	0 0
Amount due by the bank		2,792,507	19 2
Amount of the "guarantee fund," June 30, 1849	£130,696 10 0		
Six months' interest on ditto, at 3*l.* per ct. per annum	1,960 8 11		
	—	132,656	18 11
Undivided profit for the last half-year		15,433	14 1
Amount carried to profit and loss account		52,857	16 2
Total		£3,593,456	8 4
By Exchequer Bills, India Bonds, &c.		£ 671,976	5 1
Bills discounted, loans, and cash		2,893,355	3 3
Building, furniture, &c., in Princes-street	£18,250 0 0		
Ditto ditto, in Pall-mall	9,875 0 0		
	—	28,125	0 0
Total		£3,593,456	8 4

PROFIT AND LOSS ACCOUNT OF THE LONDON JOINT-STOCK BANK,
For the Half-year ending December 31, 1849.

To current expenses, proportion of building expenses, directors' remuneration, bad debts, income tax, &c.		£18,915	1 3
Amount carried to profit and loss, new account, being rebate of interest on bills discounted not yet due		8,810	4 3
Amount transferred to the credit of the "guarantee fund," in addition to the above amount of 132,656*l.* 18s. 11d.		66	4 9
Dividend account for the payment of half a year's dividend, at the rate of 6*l.* per centum per annum, upon 600,000*l.*, amount of paid-up capital upon 60,000 shares		18,000	0 0
Ditto for payment of a bonus of 7s. 6d. per share		22,500	0 0
Total		£68,291	10 3
By balance brought down		£52,857	16 2
Undivided profit brought forward from the last half-year		15,433	14 1
Total		£68,291	10 3

[The resolutions passed will be found in our advertising columns.]

The CHAIRMAN moved, that a dividend at the rate of 6 per cent., together with a bonus of 7s. 6d. per share, be declared.—Mr. TAYLER (deputy-chairman) seconded the motion, which, together with the report, was agreed to.

Mr. BORRADAILE asked, whether the difference between the last half year's profits—viz.: 33,000*l.*—and those of the present half-year (25,000*l.*) arose from the difference in the rate of interest, or if it arose from any previous bad debts not before written off? He asked that question, because a neighbouring bank had just held a meeting, and in the newspapers of the day he saw an enumeration of something like 60,000*l.* of bad debts, as finally written off. If he had been a proprietor in that bank, he should have hoped that they had been written off a year or two ago. (Hear, hear, and laughter).

The CHAIRMAN: It arose almost entirely from the decreased value of money. (Hear, hear). With regard to the amount written off the bad debts, we have every reason to believe, that we have written off the full amount of any bad debts up to the present time. (Hear, hear.) Is the answer I have given to the worthy proprietor quite satisfactory; or would he wish me to give him any further information?

Mr. BORRADAILE said, he clearly understood it arose from the great difference in the value of money.

The CHAIRMAIN said, the amount written off during the last half-year was somewhat more than in the previous one.

Mr. BORRADAILE said it was quite satisfactory, but there was nothing like knowing what was written off, in order that they might be cognisant of their actual position. The next question was, whether the board had at all considered, or were likely to consider, a subject which had often been alluded to at their general meetings—that was, the guarantee fund. The information he wished to obtain was, whether there was any given amount to which this fund (which he saw was nearly 133,000*l.*), should be limited. Now he thought the board ought to say what amount of guarantee fund would be consistent with the objects the bank had in view in respect to their deposits, which he fancied were higher than they had ever been before. If their liabilities increased, he would, of course, suppose there could be a corresponding guarantee fund; but still, he should like to know if there was to be any maximum, and whether the board had decided that they would not increase the guarantee fund.

The CHAIRMAN: The object of the guarantee fund is to equalise the dividends, as events may happen, or in the unexpected occurrence of any heavy losses to the proprietors, that they may still calculate on their regular dividend. (Applause.) We do not wish to fix on any limited amount, and I for one should like that fund to go on indefinitely, and hope it will continue to increase as long as our business increases. (Applause.)

Mr. BORRADAILE said, that with a bonus of 7s. 6d. for the past year, the guarantee fund appeared to him almost untouchable.

The CHAIRMAN: The worthy shareholder is very sanguine. (Laughter.)

A PROPRIETOR asked, what was the amount of the appropriation of 1 per cent. on the balances?—A CHAIRMAN: About 9000*l.* a year.

The retiring directors were then re-elected unanimously.—Sir JAMES DUKE was elected a director.—Mr. OXLEY (a director) returned thanks.

Sir JAMES DUKE, Bart., M.P., said, he felt it due to that respectable body of proprietors to attend personally on this occasion, in case any of them should wish to put a question to him on his coming forward to solicit their suffrages to fill the important office to which they had done him the honour of electing him so unanimously. He would most cordially unite with the directors to maintain the high character and prosperity of this bank, which he hoped to see second to no other in this great metropolis.

Mr. Deputy CORNEY paid a high compliment to Mr. Mitcalfe, the director who retired, and moved that the meeting record their acknowledgments of the past services of Mr. William Mitcalfe, and the regret of the proprietors at the cause of his retirement from the service of the bank.—Mr. GIBBS seconded the motion, which was passed unanimously.

The CHAIRMAN said that he and all his colleagues most heartily agreed in the resolution just passed..

Mr. BORRADAILE had the pleasing duty of moving a vote of thanks to the chairman and directors for their management of the bank. (Applause.)—The motion was seconded and passed unanimously.

Mr. HARRISON begged to move the thanks of the meeting to their respected manager.—Mr. SAMBROOKE seconded the motion, which was agreed to.

Mr. POLLARD, the manager, returned thanks, and the meeting then separated.

LONDON AND WESTMINSTER BANK.

A half-yearly meeting of the proprietors was held on Wednesday, to receive the report of the directors, and a statement of the accounts of the company, both of which proved very favourable, and were unanimously adopted. On a dividend for the half-year, at the rate of 6 per cent. per annum, being proposed, some remarks were made expressive of regret that no bonus was added; but the chairman explained that since the previous meeting the losses of 1847 had been wiped off through the augmented profits, and therefore the position of the company was really much better than at first appeared; besides, it should be remembered that the rates of interest current during the past year had been very low, notwithstanding which, the net profits for the six months were 32,391*l.* 0s. 3d., which, after payment of the dividend, would leave a sum of 2391*l.* 0s. 3d. to be carried to the surplus fund, which by such addition amounts to 107,844*l.* 14s. 6d., being the amount of the gross surplus profits to the 31st December, 1849. Some discussion took place on the subject of Scotch banking, and it was finally decided to introduce the system into this institution, provided that the directors, after ascertaining the success which it may meet with in London, shall find its adoption calculated to advance the prosperity of the company. The rate of dividend proposed was, together with the report, adopted, and the meeting separated, after voting thanks to the chairman and directors,

CLYDESDALE JUNCTION RAILWAY.—In consequence of the non-payment of the dividend by the Caledonian Railway, which they guaranteed to this company at the rate of 6 per cent. per annum, the shareholders have formed a committee, and are about to take the necessary measures against the Caledonian Company to enforce payment. The traffic on the line at the present time only amounts, it is said, to 592*l.* per week. The line is 16 miles long.

CORNISH STEAM-ENGINES.

The number of pumping-engines reported for the month of Dec. is 27—the quantity of coals consumed being 2341 tons lifting, in the aggregate, 22,000,000 tons of water 10 fathoms high—the average duty of the whole is, therefore, 54,000,000 lbs. lifted 1 foot high by the consumption of a bushel of coal.—The following have exceeded the average:—

Mines.	Engines.	Length of stroke	Load in pounds.	Load per sq. inch on pist.	Strokes per min.	Consump. of coal in bus.	Million lbs. lifted 1 foot by consump. of 1 bush. coal	Mills. Lifted 1 foot by 1 cwt. of coal.
Great Work..	Loed's 60-in. ..	9·0	55,343	15·2	7·8	1872	64·7	77
East W. Crofty	Trevenson's 80	10·33	82,333	12·2	7·1	3046	60·7	72
Carn Brea....	76-inch	8·25	84,557	14·7	4·5	1954	55·4	66
S.Wh. Frances	75-in.	11·0	53,523	9·9	5·8	1872	59·5	71
United Mines	Taylor's 85-in.	11·0	97,521	15·6	6·3	3934	79·7	95
Ditto	Cardoza's 90-in.	9·0	100,682	13·8	7·7	4099	58·1	69
Ditto	Eldon's 30-inch	9·0	13,631	16·0	7·3	440	66·6	79
Ditto	Loam's 85-inch	10·0	67,947	11·5	7·4	3457	55·7	66
Ditto	Hocking's 85-in.	10·0	97,817	14·4	8·0	4493	57·2	68
Tywarnhayle..	Gardiner's 80-in	10·0	75,927	12·0	7·5	3048	58·9	70
East Wh. Rose	Penrose 70-in.	10·0	76,422	17·8	4·5	2154	56·5	67
Ditto	Michell's 70-in.	10·0	73,677	17·2	4·9	1875	69·1	82

COAL MARKET, LONDON.

PRICE OF COALS PER TON AT THE CLOSE OF THE MARKET.

MONDAY.—Carr's Hartley 17—Chester Main 16 6—Holywell 17 6—North Percy Hartley 16 6—Ord's Redheugh 15 6—Ravensworth West Hartley 17—Tanfield Moor 16 Townley 17—Wall's-End Brown 17 3—Barraton Killingworth 18 6—Eden Main 19—Lambton Primrose 19—Bell 19—Belmont 19—Hetton 20—Haswell 20 3—Hutton 18—Jonassohns 17 9—Stewart's 20—Whitwell 18 6—Caradoc 19 3—Denison 18 6—Thornley 19—Whitworth 15 6—Seymour Tees 19—South Durham 19—Tees 20—West Tees 18 6—Nixon's Merthyr and Cardiff 21 6—Sidney's Hartley 17 3—Hilda 18 3.—Ships, 53; sold, 22

WEDNESDAY.—Chester Main 17—Holywell 18 6—Ord's Redheugh 16—Townley 17 6—Wylam 17—Nixon's Merthyr and Cardiff 21 6—Wall's End Hilda 19—Riddell 19—Braddyll 21—Stewart's 21—Whitwell 19—Caradoc 19 6—Kelloe 21—Whitworth 16 6—Richardson's Tees 18 6—St. Helen's Tees 18 6.—Ships at market, 31; sold, 8.

FRIDAY—Holywell 19—Wall's-End Riddell's 19 6—Eden Main 20—Bell 20—Braddyll 21—Belmont 20 6—Jonassohns 19—Stewart's 21—Whitwell 19 6—Caradoc 20—Cassop 20—Kelloe 21—Whitworth 17—Nixon's Merthyr 21 6—Sidney Hartley's 19 6.—Ships at market, 23; sold, 8.

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